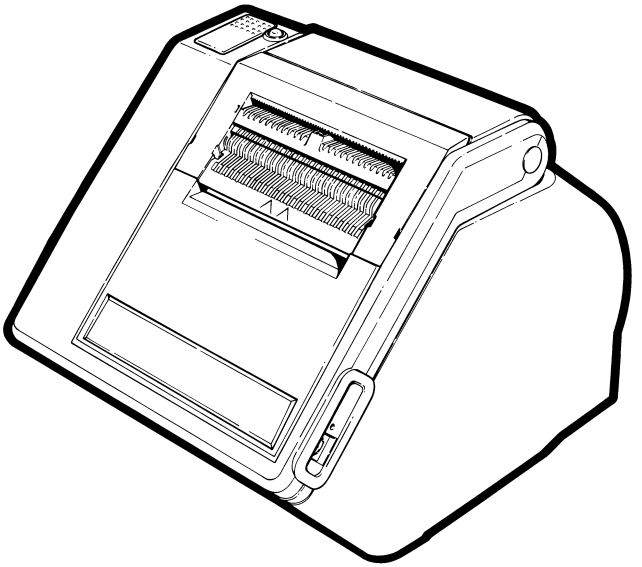
Pitney Bowes
Shipping and Weighing Systems

Model J640 / J641
Pro-Mark Printer

Programmer's Manual



SV60255 3/95

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Preface

This manual should be used with the Pitney Bowes J640™/J641™ printer.

About This Manual

You need not be a programmer to use this manual, but you need to know basic programming fundamentals.

Terms to Know

Batch Data — This contains fields within (**{ }**) that print on the supply.

Batch Header — This is the first line of a batch, immediately following the Start of Packet (**{**). A batch header must begin with **B**, and is followed by various batch elements (parameters).

Bitmapped Fonts — These fonts reside in the printer's RAM or in a ROM chip. If you change the point size, you have changed the font. Magnifying these fonts causes some jaggedness to occur.

Bitmapped Images — These images are formed through a series of dots.

Buffer — This is a storage area in your printer's memory that holds specific data (images, formats, etc).

Compliance Labels These are shipping labels used exclusively for a certain retailer. The label complies with the retailer's standards.

Compliance Label Overlay This is the "skeleton" of the compliance label that contains the fixed fields (constant text, lines, etc.).

Field This can be text, bar codes, lines, boxes, constant, or non-printable text. It is the result of a field definition.

Field Definition This is any string of elements (parameters) that pertain to one field. A field definition begins with a field identifier (such as **T**, **B**, **D**, **C**, etc.). For example, a field definition within a format may look something like:

```
T,1,10,V,250,50,0,1,1,1,B,C,0 ¦
```

Field Elements (Parameters) These are the parameters that apply to a field and are separated by commas. (In the above example, **B** is a field element for Black print on a white background.)

Format This is the layout or design for your supply.

Format Header This is the first line of a format, immediately following the start of a Packet (**{**). A format header must begin with **F**, followed by various header elements.

Format Packet This is a packet that creates the format. Refer to the definition of Packet for more information.

Graphic Field This field is specified in the format packet. The values for row and column position the graphic image on the supply.

Graphic Header	The first line of the graphic packet, immediately following the start of packet ({). A graphic header must begin with G, followed by various graphic elements.
Graphic Packet	This is a packet that creates a graphic bitmap image or a compliance label overlay. Refer to the definition of Packet for more information.
Monospaced Fonts	All characters have the same width and are easy to center justify. (Standard, Bold, and Reduced fonts are monospaced.)
Non-volatile RAM	This contains information that is SAVED on power-down.
Option	This is any line within a format that applies special formatting to a field. This line always begins with **R** and must immediately follow the field it applies to.
Packet	This is any string of characters contained within (**{ }**).
Proportionally Spaced Fonts	All characters have different widths and are difficult to center justify. (The CG Triumvirate fonts are proportionally spaced.)
Soft Fonts	These fonts reside in the printer's RAM. They can be erased or overwritten.
Volatile RAM	This contains information that is LOST on power-down.

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Chapter 1. Designing a Format

This chapter describes how to

- design custom labels.
- categorize data into field types.
- use the Supply Layout Grid and Format Worksheet.

What is a Format?

A *format* defines which fields appear and where the fields are printed on the label. The printer requires this information in a special form, using Monarch® Printer Control Language (MPCLII).

Before you create your format file, you must design your label. There are several steps to designing a custom label:

1. Decide which fields should appear on your label. Refer to "Determining Format Contents" in this chapter for more information.
2. Determine which size label you want to use. Refer to "Considering Print Area" in this chapter for more information.
3. Draw a rough sketch of your label. You may want to draw several variations to see what works best. Refer to "Drawing Rough Sketches" in this chapter for more information.
4. Identify the field types that appear on your label. Refer to "Considering Field Types" in this chapter for more information.
5. Decide which fonts you want to use. Refer to "Considering Fonts" in this chapter for more information.

6. Fill out your Format Worksheet. Refer to "Format Worksheet" in this chapter for more information.

At this point, you are ready to communicate your design to the printer. To do this:

7. Create a format file, based on how you filled out your worksheet. Refer to Chapter 7, "Syntax Quick Reference," for more information.
8. Download your format to the printer. Refer to Chapter 6, "Printing," for more information.

Using Different Formats

You can use 9405™ formats with the J640/J641 printer.

Determining Format Contents

Before you lay out your format, you need to make a few decisions. For example:

- How large is your supply?
- What kind of text do you want to print?
- Which fonts do you want to use?
- Do you want to include a bar code?
- Do you want to include graphics?

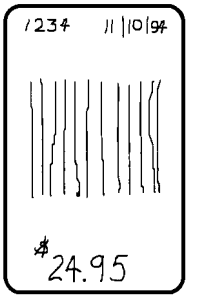
Considering Print Area

The "bottom" is the edge that exits the printer first. The print area is centered on the supply and it begins 0.06 inches from the bottom of the supply. Refer to Appendix E, "Format Design Tools," for the non-print zone on this printer.

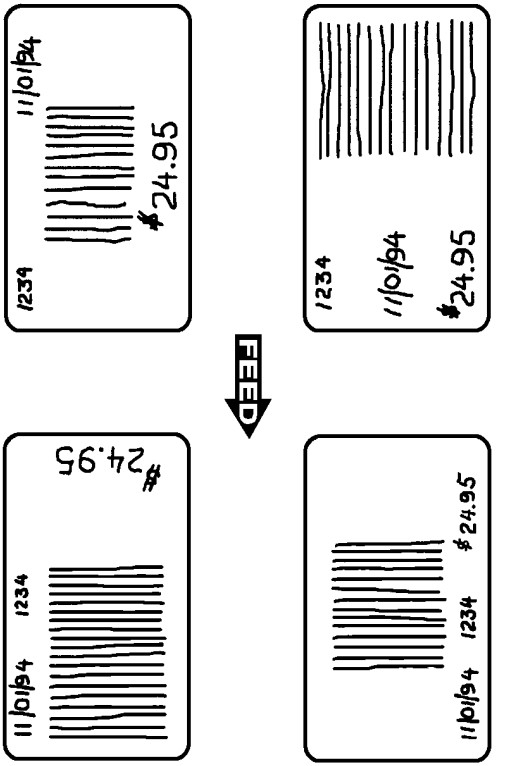
Unit of Measure	Supply Size (Width x Length)	Maximum Print Area (Width x Length)
English (1/100 inch)	416 x 620	400 x 604
Metric (1/10 mm)	1055 x 1575	1016 x 1534
Dots (1/192 dots)	797 x 1190	768 x 1160

Drawing Rough Sketches

After you decide what information you want to print, sketch how you want the information to appear on the label. You may want to draw several sketches that contain the same information, but with different layouts, to determine which one works best for you. Note any areas that are preprinted on the label, such as a logo.



As soon as you know what information to include on the label, and you have a rough sketch, you can use a supply layout grid to help you layout your label. If you do not want to use a grid, go to "Considering Field Types" to choose what information you want on your label.



Supply Layout Grids

A Supply Layout Grid contains measurement markers. These markers help you accurately position information on your label.

Decide whether you want to design formats using English, Metric, or Dot measurements. You can choose from the following three Supply Layout Grids:

- English

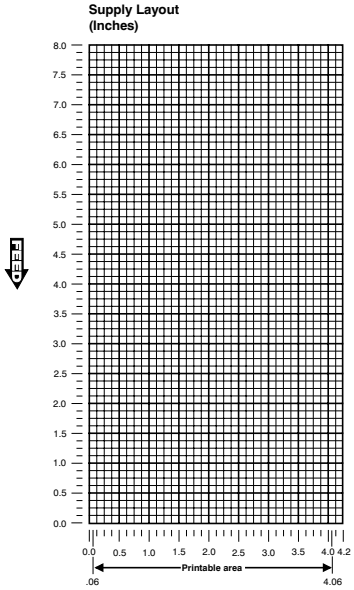
  The English grid, shown to the right, is measured in 1/100 inches.

- Metric

  The Metric grid is measured in 1/10 millimeters (mm).

- Graphic

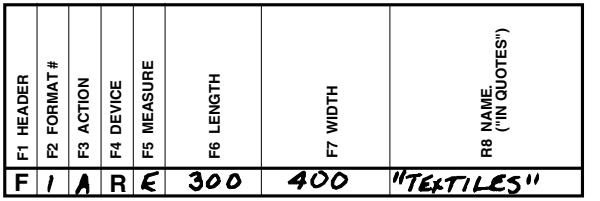
  The printer uses dots to print images on a label. The printhead has 192 dots per inch.



Use the Dot Layout Grid if you prefer to design formats according to dot measurement.

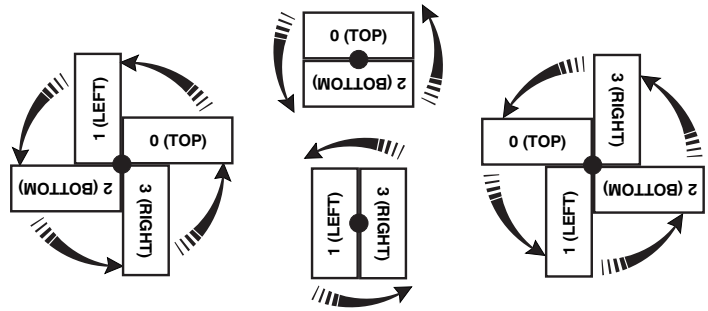
If you want to use supply layout grids, a sample of each is in Appendix E, "Format Design Tools."


F1 HEADER
F2 FORMAT #
F3 ACTION
F4 DEVICE
F5 MEASURE
F6 LENGTH
F7 WIDTH
R8 NAME
("IN QUOTES")
F
R



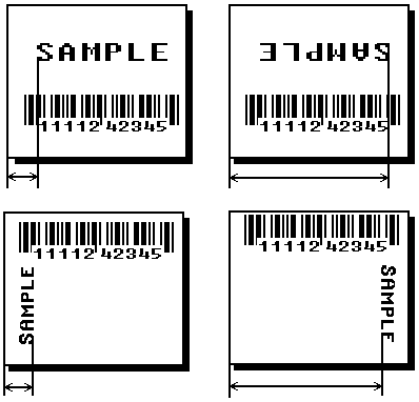
F1 HEADER	F2 FORMAT #	F3 ACTION	F4 DEVICE	F5 MEASURE	F6 LENGTH	F7 WIDTH	R8 NAME ("IN QUOTES")
F	1	A	R	E	300	400	"TEXTILES"

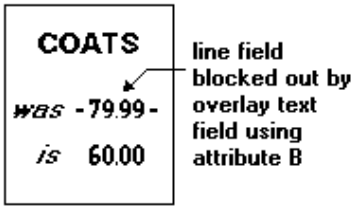
T1 HEADER	T2 FIELD #	T3 # OF CHAR.	T4 FIX/VAR	T5 ROW	T6 COLUMN	T7 GAP	T8 FONT	T9 HGT. MAG.	T10 WID. MAG.	T11 COLOR	T12 ALIGNMENT	T13 CHAR. ROT.	T14 FIELD ROT.	T15 SYM. SET

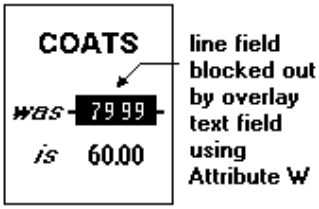


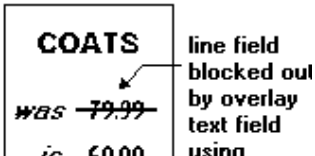
Left/Center/Right-Justified **Balanced** **End-Justified**

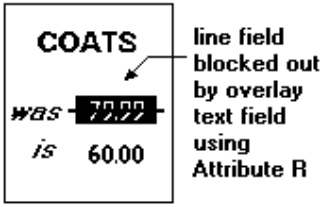


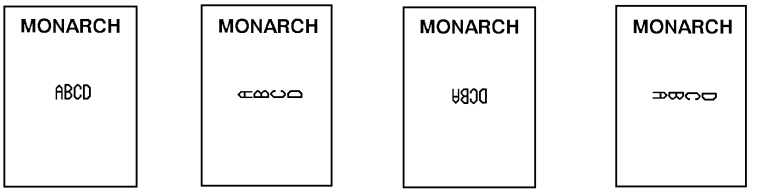

SAMPLE
11112 42345
SAMPLE
11112 42345
11112 42345
SAMPLE
11112 42345
SAMPLE


COATS
was -79.99-
is 60.00
line field blocked out by overlay text field using attribute B


COATS
was 79 99
is 60.00
line field blocked out by overlay text field using Attribute W


COATS
was 79.99
is 60.00
line field blocked out by overlay text field using Attribute O

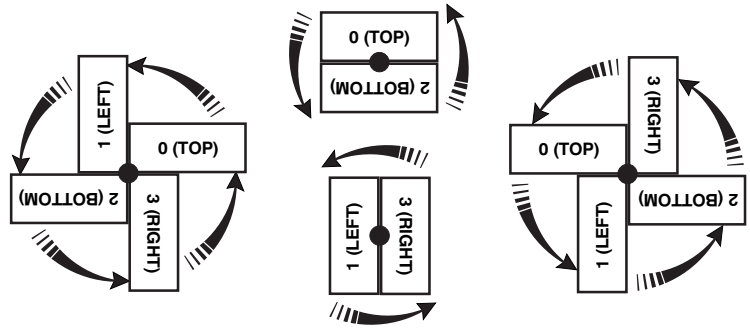

COATS
was 79.99
is 60.00
line field blocked out by overlay text field using Attribute R



1
Tops of characters point to **left** of field.

2
Tops of characters point to **bottom** of field.

3
Tops of characters point to **right** of field.



Left/Center/Right-Justified **Balanced** **End-Justified**

T1 HEADER	T2 FIELD #	T3 # OF CHAR.	T4 FIX/VAR	T5 ROW	T6 COLUMN	T7 GAP	T8 FONT	T9 HGT. MAG.	T10 WID. MAG.	T11 COLOR	T12 ALIGNMENT	T13 CHAR. ROT.	T14 FIELD ROT.	T15 SYM. SET
T	2	10	V	250	050	0	1	1	1	B	C	0	0	0
T	5	25	V	080	010	0	1	1	1	B	L	0	0	0
T														

B1 HEADER	B2 FIELD #	B3 # OF CHAR.	B4 FIX/VAR	B5 ROW	B6 COLUMN	B7 FONT	B8 DENSITY	B9 HEIGHT	B10 TEXT	B11 ALIGNMENT	B12 FIELD ROT.
B											
B											
B											



Left/Center/Right-Justified Fields

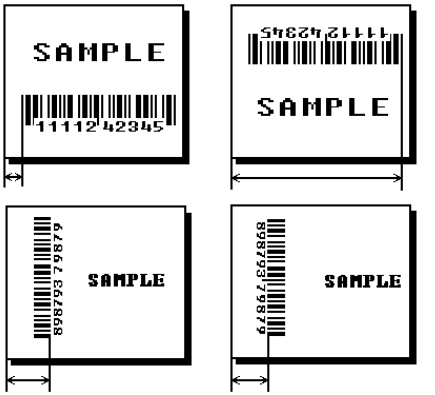


Balanced Fields



End-Justified Fields


SAMPLE
11112 42345
SAMPLE
11112 42345
8987937 98 79
SAMPLE
8987937 98 79
SAMPLE


SAMPLE
11112 42345
SAMPLE
11112 42345
8987937 98 79
SAMPLE
8987937 98 79
SAMPLE


0 12345 67890 5

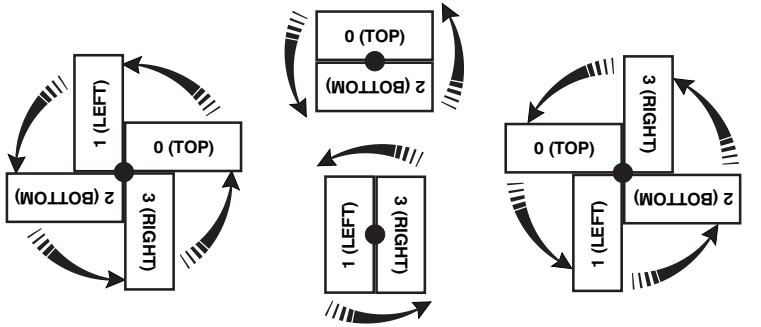

12345 67890


0 12345 67890


12345 67890 5

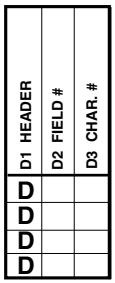

0 12345 67890 5





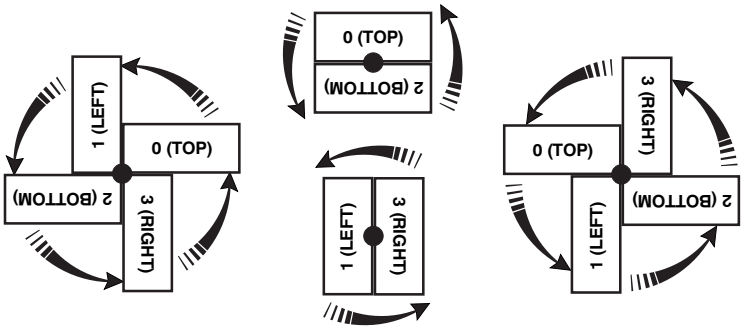
Left/Center/Right-Justified **Balanced** **End-Justified**

	B1 HEADER	B2 FIELD #	B3 # OF CHAR.	B4 FIX/VAR	B5 ROW	B6 COLUMN	B7 FONT	B8 DENSITY	B9 HEIGHT	B10 TEXT	B11 ALIGNMENT	B12 FIELD ROT.
B		3	12	V	150	040	1	2	80	7	L	0
B												
B												


D1 HEADER
D2 FIELD #
D3 CHAR. #
D
D
D
D

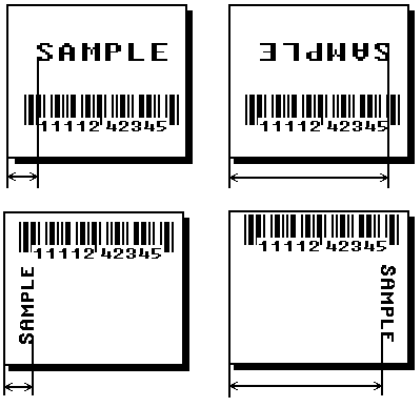
	D1 HEADER	D2 FIELD #	D3 # OF CHAR.
D	3	3	
D	4	20	
D			
D			

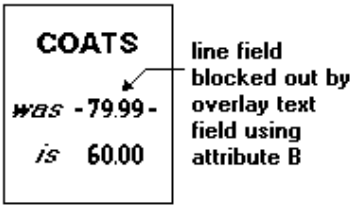
	C1 HEADER	C2 ROW	C3 COLUMN	C4 GAP	C5 FONT	C6 HGT. MAG.	C7 WID. MAG.	C8 COLOR	C9 ALIGNMENT	C10 CHAR. ROT.	C11 FIELD ROT.	C12 FIXED CHAR. ("IN QUOTES")	C13 SYM. SET
C													
C													
C													

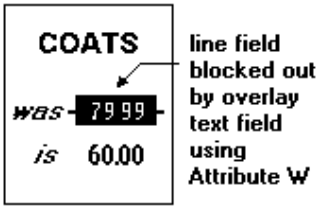


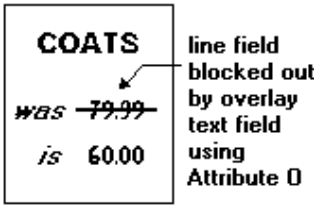
Left/Center/Right-Justified **Balanced** **End-Justified**

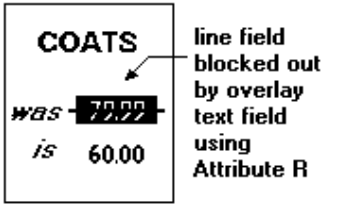


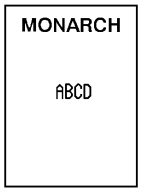

SAMPLE
11112 42345
SAMPLE
11112 42345
11112 42345
SAMPLE
11112 42345
SAMPLE


COATS
was -79.99-
is 60.00
line field blocked out by overlay text field using attribute B

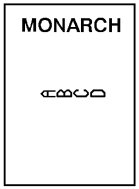

COATS
was 79.99
is 60.00
line field blocked out by overlay text field using Attribute W


COATS
was 79.99
is 60.00
line field blocked out by overlay text field using Attribute O


COATS
was 79.99
is 60.00
line field blocked out by overlay text field using Attribute R



0
Tops of characters point to **top** of field.



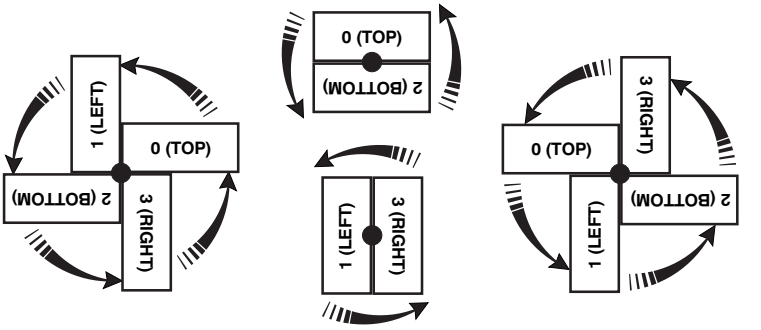
1
Tops of characters point to **left** of field.



2
Tops of characters point to **bottom** of field.



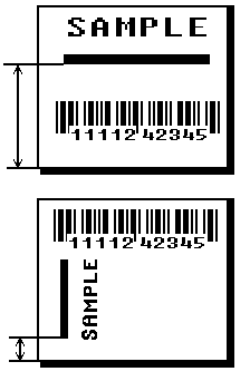
3
Tops of characters point to **right** of field.

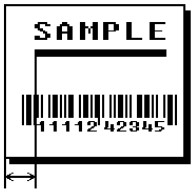


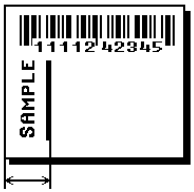
Left/Center/Right-Justified **Balanced** **End-Justified**

C1 HEADER	C2 ROW	C3 COLUMN	C4 GAP	C5 FONT	C6 HGT. MAG.	C7 WID. MAG.	C8 COLOR	C9 ALIGNMENT	C10 CHAR. ROT.	C11 FIELD ROT.	C12 FIXED CHAR. ("IN QUOTES")	C13 SYM. SET
C												
C												
C												

L1 HEADER	L2 TYPE	L3 ROW	L4 COLUMN	L5 ANGLE/ END ROW	L6 LENGTH/ END COL.	L7 THICKNESS	L8 PATTERN
L							
L							

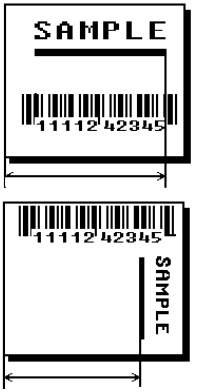



SAMPLE
11112 42345


11112 42345
SAMPLE


SAMPLE
11112 42345

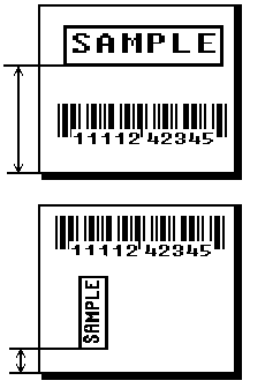

11112 42345
SAMPLE

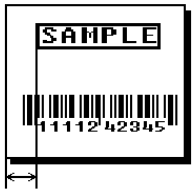


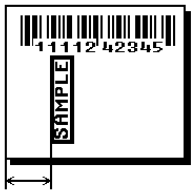
Dots	Thickness
1	
10	
24	
48	
96	

L1 HEADER	L2 TYPE	L3 ROW	L4 COLUMN	L5 ANGLE/ END ROW	L6 LENGTH/ END COL	L7 THICKNESS	L8 PATTERN
L	S	110	030	110	150	10	" "
L							

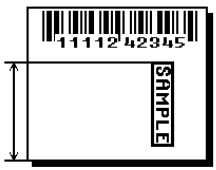
Q1 HEADER	Q2 ROW	Q3 COLUMN	Q4 END ROW	Q5 END COLUMN	Q6 THICKNESS	Q7 PATTERN
Q						
Q						

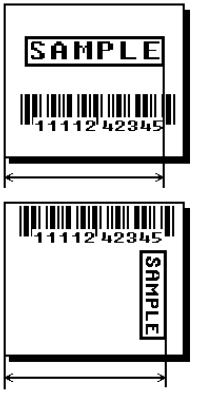



SAMPLE
11112 42345


11112 42345
SAMPLE


SAMPLE
11112 42345


11112 42345
SAMPLE



Dots	Thickness
1	
10	
24	
48	
96	

Q1 HEADER	Q2 ROW	Q3 COLUMN	Q4 END ROW	Q5 END COLUMN	Q6 THICKNESS	Q7 PATTERN
Q	240	030	270	150	3	" "
Q						

Chapter 2. Applying Field Options

This chapter shows how to apply field options to text, bar code, and non-printable text fields in your format. If you wish to quickly review syntax, see Chapter 7, "Syntax Quick Reference."

About Field Options

Field options further define text, bar code, and non-printable text fields. The following options are available:

Option 1	Defines fixed characters. This option is an alternative to using a constant text field.
Option 4	Copies/merges data from previous fields.
Option 30	Pads data by adding characters to the field.
Option 31	Calculates a check digit for the field and specifies the check digit scheme.
Option 42	Formats text and non-printable text fields as price fields.
Option 50	Customizes the density of your bar code.
Option 51	Defines the security level and truncation for PDF417 bar codes.
Option 52	Defines the aspect ratio for PDF417 bar codes.
Option 60	Defines fields that increase or decrease to act as "counters." (Numeric fields only)
Option 61	Reimages a field that contains overlays.

Combining Field Options

You can use more than one option with most fields. For example, you can use Option **4** to copy data from another field, and then use Option **30** to pad the field. When you use multiple options for the same field, you must place the options in the order you want to apply them to your format.

Restrictions

Some options cannot be used together. For example, incrementing (Option **60**) and price field (Option **42**) options cannot be applied to the same field. Refer to the following sections addressing individual options for specific combinations to avoid.

Option **4** (copy a field) is the only option that can be repeated for a single field.

Field Options on the Format Worksheet

The Field Options sections on the Format Worksheet are located to the right of the text, bar code, and non-printable sections.

Defining Fixed Data (Option 1)

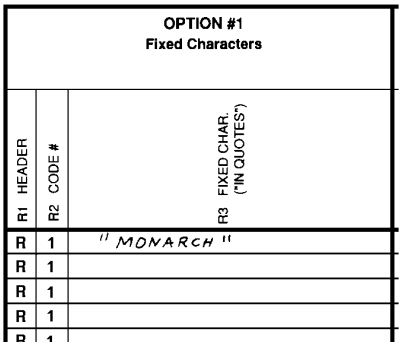
Fixed data is information (a company name or store number) you want to print on all labels. You can define fixed characters for an entire field or for part of a field.

Defining Fixed Characters for an Entire Field

There are two ways to define fixed characters for an entire field. Define a constant text field, as shown in Chapter 1, "Designing a Format," or define a fixed field using Option **1**. Option **1** enables you to define fixed data for the field.

To define a fixed field:

1. Define your text, non-printable text, or bar code field on the Format Worksheet as shown in Chapter 1, "Designing a Format." Remember
   - ✦ Write **F** in box **T4** or **B4** to specify a fixed field length.
   - ✦ Make sure the maximum number of characters defined in box **T3** or **B3** is the same as the number of characters you will place in the field.
2. Find Option **1** on the Format Worksheet.



OPTION #1
Fixed Characters

R1 HEADER	R2 CODE #	R3 FIXED CHAR. (*IN QUOTES*)
R	1	"MONARCH"
R	1	
R	1	
R	1	
R	1	

3. Write the characters for this field in box **R3** exactly as you want them to appear. Place quotation marks around the phrase, like this:

   "MONARCH"

   Any spaces in the phrase are fixed characters.

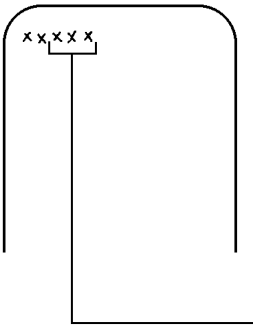
Make sure you enter the fixed characters in the same row on the worksheet as the text or bar code field to which they apply.

OPTION #1
Fixed Characters

R1 HEADER	R2 CODE #	R3 FIXED CHAR ("IN QUOTES")
R	1	"AB_ _ "
R	1	
R	1	
R	1	
R	1	

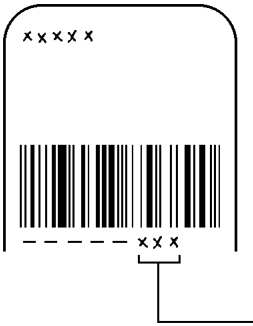
OPTION #4
Copy Data from Previous Field

R1 HEADER	R2 CODE #	R3 SRC FIELD	R4 SRC START	R5 # TO COPY	R6 DEST. START	R7 COPY CODE
R	4	1	1	3	1	1
R	4	2	1	3	4	1
R	4	3	1	1	7	1
R	4	4	1	4	8	1
R	4					



OPTION #4
Copy Data from Previous Field

	R1 HEADER	R2 CODE #	R3 SRC FIELD	R4 SRC START	R5 # TO COPY	R6 DEST. START	R7 COPY CODE
	R	4					
	R	4					
	R	4	2	3			
	R	4					
	R	4					
	R	4					
	R	4					



OPTION #4
Copy Data from Previous Field

	R1 HEADER	R2 CODE #	R3 SRC FIELD	R4 SRC START	R5 # TO COPY	R6 DEST. START	R7 COPY CODE
	R	4					
	R	4					
	R	4	2	3	3	6	
	R	4					
	R	4					
	R	4					
	R	4					

OPTION #4
Copy Data from Previous Field

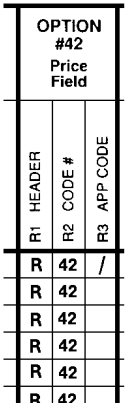
R1 HEADER	R2 CODE #	R3 SRC FIELD	R4 SRC START	R5 # TO COPY	R6 DEST. START	R7 COPY CODE
R	4	1	1	3	1	1
R	4	2	1	3	4	1
R	4	3	1	1	7	1
R	4	4	1	4	8	1
R	4					

OPTION #4
Copy Data from Previous Field

R1 HEADER	R2 CODE #	R3 SRC FIELD	R4 SRC START	R5 # TO COPY	R6 DEST. START	R7 COPY CODE
R	4	1	1	3	1	1
R	4	2	1	3	4	1
R	4	3	1	1	7	1
R	4	4	1	4	8	1
R	4					

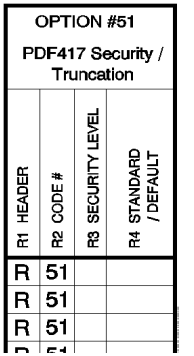
OPTION #30 Pad Data			
R1 HEADER	R2 CODE #	R3 L\R	R4 CHAR
R	30		
R	30		
R	30		
R	30		

OPTION #31 Define Check Digit			
R1 HEADER	R2 CODE #	R3 GEN / VER	R4 CHECK DIGIT #
R	31	G	/
R	31		
R	31		
R	31		



OPTION #42 Price Field		
R1 HEADER	R2 CODE #	R3 APP CODE
R	42	/
R	42	
R	42	
R	42	
R	42	
R	42	

OPTION #50 Bar Code Densities						
R1 HEADER	R2 CODE #	R3 DOT WIDTH NAR. ELEMENT	R4 DOT WIDTH WIDE ELEMENT	R5 ADDITIONAL CHAR. GAP	R6 ADDITIONAL NAR. SPACE	R7 ADDITIONAL WIDE SPACE
R	50					
R	50					
R	50					
R	50					

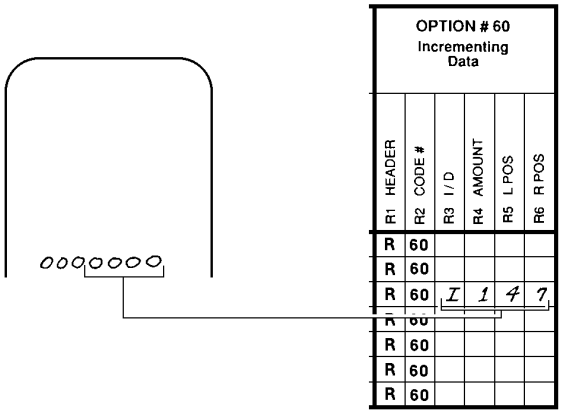


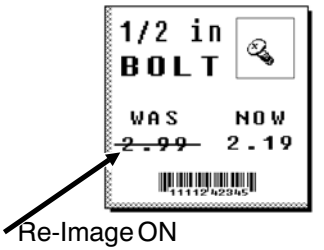
OPTION #51 PDF417 Security / Truncation			
R1 HEADER	R2 CODE #	R3 SECURITY LEVEL	R4 STANDARD / DEFAULT
R	51		
R	51		
R	51		

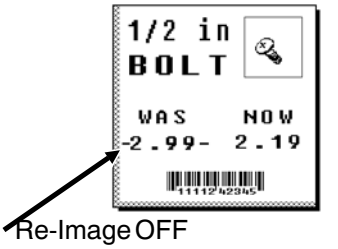
OPTION #52 PDF417 Aspect Ratio			
R1 HEADER	R2 CODE #	R3 ROW / COLUMN	R4 DIMENSION NUMBER
R	52		
R	52		
R	52		
R	52		

OPTION # 60
Incrementing Data

R1 HEADER	R2 CODE #	R3 I / D	R4 AMOUNT	R5 L POS	R6 R POS
R	60				
R	60				
R	60	I	1		
R	60				
R	60				
R	60				
R	60				


OPTION # 60
Incrementing Data
R1 HEADER
R2 CODE #
R3 I / D
R4 AMOUNT
R5 L POS
R6 R POS
R 60
R 60
R 60 I 1 4 7
R 60
R 60
R 60





OPTION # 61 Reimage Field		
R1 HEADER	R2 CODE #	R3 INPUT (✓)
R	61	✓
R	61	
R	61	

Chapter 3. Using Check Digits

Check digits are typically used to ensure that a text or bar code field scans correctly. If you apply Option **31**, the printer calculates a check digit.

You can use check digits with text or bar code fields. Check digit calculations are performed on *numeric* data only.



Do Not use check digits with price fields.

You can define a check digit scheme for some bar codes. The following bar codes contain predefined check digits. Do not define a check digit scheme for these bar codes:

- UPC
- EAN
- Code 39 (with the MOD43 check digit)
- Code 93
- PDF417
- POSTNET
- Maxicode

Defining a Check Digit Scheme

A check digit scheme determines how the printer calculates a check digit. When you define a check digit scheme, you assign a number to identify it. This number is later entered in box **R4** when you apply Option **31** to a field.

To create a check digit scheme, make a copy of this page or the check digit worksheet in Appendix E, "Format Design Tools." Fill in your copy as you follow these steps.

A1 HEADER	A2 SELECTOR #	A3 ACTION	A4 DEVICE	A5 MODULUS	A6 LENGTH	A7 ALGORITHM	WEIGHTS A8
A			**R**				

1. Assign a number from **1** to **10** to identify this check digit scheme. You will refer to this number later when you apply Option **31** to a field. Write the number in box **A2.**
2. Write **A** in box **A3** to send the check digit scheme to the printer. (You may enter **C** for this parameter later to clear the check digit scheme.)
3. Box **A4** must contain **R** for the device, since this printer stores the check digit scheme in RAM. This is the only valid option for this printer.
4. Assign a number from **2** to **11** to use as a *modulus*. The modulus is used to divide the sum of products or the sum of digits. Write the number in box **A5**.
5. Determine the maximum number of characters the field will contain. Write the number in box **A6**.
6. Determine an *algorithm*. The algorithm determines how the check digit is calculated. For an example of how these algorithms work, refer to "Sum of Products Calculation" or "Sum of Digits Calculation" later in this chapter. Write **D** for "sum of digits," or **P** for "sum of products" in box **A7**.

7. Determine what numbers to use as the *weight string*. A weight string is a group of two or more numbers that is applied to a field. For an example of how the weight string is applied to a field, refer to "Sum of Products Calculation" or "Sum of Digits Calculation" later in this chapter. In box **A8**, enter the weight string enclosed in quotation marks, like this:

```
"1234"
```

Sum of Products Calculation

This is an example of how the printer uses Sum of Products to calculate a check digit for this data:

```
5 2 3 2 4 5 2 1 9
```

1. Weights are applied to each digit, starting with the last digit in the weight string. They are applied right to left, beginning at the right-most position of the field. Remember, a weight string must contain at least two different numbers. This example has a weight string of **1,2,3,4**.

field:	5 2 3 2 4 5 2 1 9
weight string:	4 1 2 3 4 1 2 3 4

2. Each digit in the field is multiplied by the weight assigned to it:

field:	5 2 3 2 4 5 2 1 9
weight string:	4 1 2 3 4 1 2 3 4
products:	20 2 6 6 16 5 4 3 36

3. Next, the product of each digit is added together. This is the sum of the products.

```
20 + 2 + 6 + 6 + 16 + 5 + 4 + 3 + 36 = 98
```

4. Divide the sum of the products by the modulus (**10** in this case), only to the whole number. The balance is called the remainder.

```
   9
10|98
  90
   8
```

5. Subtract the remainder from the modulus.

The result becomes the check digit. In this case, the check digit is **2**.

```
10 - 8 = 2
```

Sum of Digits Calculation

This is an example of how the printer uses Sum of Digits to calculate a check digit for this data:

5 2 3 2 4 5 2 1 9

1. Weights are applied to each digit, starting with the last digit in the weight string. They are applied right to left, beginning at the right-most position of the field. Remember, a weight string must contain at least two different numbers. This example has a weight string of **1,2,3,4**.

   field: 5 2 3 2 4 5 2 1 9

   weight string: 4 1 2 3 4 1 2 3 4

2. Each digit in the field is multiplied by the weight assigned to it:

   field: 5 2 3 2 4 5 2 1 9

   weight string: 4 1 2 3 4 1 2 3 4

   products: 20 2 6 6 16 5 4 3 36

3. Next, the digits of the products are added together. Two-digit products are treated as two separate digits. This is the sum of the digits.

   2 + 0 + 2 + 6 + 6 + 1 + 6 + 5 + 4 + 3 + 3 + 6 = 44

4. Divide the sum of the digits by the modulus (**10** in this case), only to the whole number. The balance is called the remainder.

```
    4
10 ) 44
   40
   ---
    4
```

5. Subtract the remainder from the modulus.

The result becomes the check digit. In this case, the check digit is **6**.

```
10 - 4 = 6
```

Chapter 4. Recording Batch Data

Batch data is the actual information printed on the supply. Batch data fills in the format's text, bar code, and non-printable text fields.

A batch consists of three parts:

- **Batch Header** identifies the format to use for the batch and how many labels to print.
- **Batch Control** allows you to define the print job, including the feed mode, batch separators, and multi-part printing.
- **Batch Data** is the actual information you put in the format fields and that is printed on the label.

Preparing the Batch Worksheet

To record batch data, make a copy of the worksheet in Appendix E, "Format Design Tools." Use the copy and save the original.

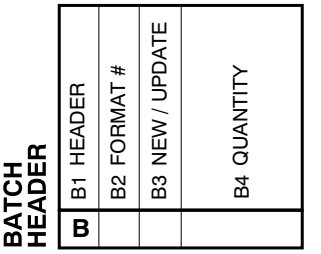
Defining the Batch Header

A batch header begins the file. It tells which format the batch uses and how many labels to print.

Example `{B,1,N,40 ¦`

Syntax `{header,format#,N/U,quantity ¦`

1. Find the Batch Header section on your worksheet.



2. Select the identification number of the format you want to use for this batch. (See box **F2** of the Format Worksheet.)

   Enter the format number in box **B2** of the Batch Worksheet.

3. Choose **N** (New) or **U** (Update) from the list below and write it in box **B3** of the Batch Worksheet.

   N If you are sending a batch that does not resemble the last one you sent, select **N**. All previous information will be cleared from all fields. Fill in new data for all fields.

   U If you are sending a batch to the printer that contains much of the same field data, select **U**. Only the fields for which you supply new data will change. Fill in only the field data that changes.

4. Specify the number of labels you want to print in each batch, write a number from **0** to **32000** in box **B4** of the Batch Worksheet.

Defining the Batch Control Field

The batch control field defines the print job and applies only to the batch that immediately follows.

1. Find the Batch Control Field section on your worksheet.

Example `{E,0,1,4,2,0,0 ¦`

Syntax `{E,feed_mode,batch_sep,print_mult,multi_part, cut_type,cut_mult ¦`

BATCH CONTROL	E1 HEADER	E2 FEED-MODE	E3 BATCH-SEP	E4 PRINT-MULT	E5 MULTI-PART	E6 CUT-TYPE	E7 CUT-MULT
	E					**0**	**0**

2. Select the feed mode. Choose **0** (continuous), or **1** (on-demand) and write your selection in box **E2**.
3. Decide if you want to use a batch separator. Write **0** (no separator) or **1** (separator) in box **E3**.
4. Secify the number of tags to print with the same image. Write a number from **1** to **999** in box E4.
5. Specify the number of identical parts on one tag. Write a number from **1** to **5** in box **E5**.
6. Write **0** in boxes **E6** and **E7**, because this printer does not have a knife.

BATCH DATA

FIELD #	DATA
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

BATCH CONTINUATION

C	DATA
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	

Chapter 5. Configuring the Printer

This chapter discusses how to

- set communication parameters.
- configure the printer using configuration control packets.
- use immediate commands to control the printer's operation at any time.

Setting Communication Parameters

In order for your printer to be able to communicate with your host, you must make sure the communications parameters are set to the same values.

You can use Record **F** or Autobaud to set communication parameters. On IBM-PC/MS-DOS computers, you can use the MODE command to set communication values on your PC.

For example

```
MODE COM1:2400,N,8,1,P
```

This command sets these communication values:

- a baud rate of 2400
- no parity
- 8 bit word length
- 1 stop bit

Using Autobaud



Do Not send any data to the printer before using autobaud.

You can use the autobaud feature to automatically set the printer's baud rate, parity, data bits, and stop bits to match the host's. To use autobaud, you must:

1. Power up the host first and then turn on the printer. Autobaud only works during the initial power up. Wait 2 to 5 seconds.
2. After the LED indicator becomes solid green or amber, send a sequence of 32 alternating **@A** characters (for a total of 64 characters) to the printer.

Example `@A@A@A@A@A@A@A@A@A@A@A@A@A@A@A@A`
`@A@A@A@A@A@A@A@A@A@A@A@A@A@A@A@A`



Do Not use character pacing (delay for each character) or any other delay while sending the autobaud sequence.

Wait one second after sending the autobaud sequence before sending any commands or data to the printer. During this time, the hardware is being changed to the new settings.

3. To select flow control and finalize communications, send Configuration Record **F**. Use the Optional Entry method described later in this chapter.

Example `{I,F,,,,,3}`

This packet sets the flow control parameter to Xon/Xoff, without changing the current communication settings established with Autobaud.

Configuration Control Packets

Use Configuration Control Packets to change the printer settings. You can send individual records or a packet of up to six records. You supply all parameters for each record. If you do not supply a parameter, the printer uses the previous value. When you turn off or reset the printer, the new settings are saved and used when the printer is turned back on.

Make a copy of the Online Configuration Worksheet in Appendix E, "Format Design Tools," and save the original. Records **A-F** are listed on the worksheet.

Configuration Packet Header

Always include an `I`, immediately after the left bracket **{** and before the record identifier (A, B, C, etc.). The `I` parameter identifies the data stream as a configuration packet.



Include the `I` parameter with each record if you are sending them individually. Include it only at the beginning of a data stream if you are sending multiple records.

This is the syntax to use when you create Configuration Control Packets to send to the printer:

Syntax for multiple records

```
{                                   Start of Packet
I,                                  Configuration Packet
                                    Identifier
1 to 6 optional records
A, parameter 1...parameter 5 ¦      System Setup
B, parameter 1...parameter 4 ¦      Supply Setup
C, parameter 1...parameter 5 ¦      Print Control
D, parameter 1...parameter 3 ¦      Monetary Formatting
E, parameter 1...parameter 9 ¦      Control Characters
F, parameter 1...parameter 5 ¦      Communication Settings
}                                   End of Packet
```

Syntax for single record

```
{                                   Start of Packet
I,                                  Configuration Packet  Identifier
A, parameter 1...parameter 5        System Setup
}                                   End of Packet
```

Record A: System Setup

Use the System Setup record to

- select the online mode.
- select the display language.
- print separators between batches.
- print a normal zero or a "slashed zero."
- select a symbol set.

Use the following syntax for a System Setup record:

Syntax

```
{I,A,online_mode,language,sep_on,slash_zero,
symbol_set ¦ }
```

The following table describes each parameter you can set using the System Setup record.

Parameter	Options	Description
Identifier	A	System Setup Record
online_mode	**0** 1	online mode "Print Mode Ready" offline mode
language	**0**	English
sep_on	**0** 1	Do not print a separator. Print a separator.
slash_zero	**0** 1	Print a standard zero. Print a zero with a slash through it.,
symbol_set	0 1 2 3	Internal. Use if formats are used with other MPCLII printers. ANSI. Use if you want to use proportionally spaced fonts. Code Page 437. Use if you need extended or international characters and proportionally spaced fonts. Code Page 850. Use if you need extended or international characters and proportionally spaced fonts.



- The default values are shown in bold.
- The CG Triumvirate fonts support only the ANSI, and DOS Code Page Symbol Sets. The CG Triumvirate fonts and downloadable fonts print a slashed zero when using the ANSI symbol set.

Example `{I,A,0,0,1,1,0 ¦ }`

This record would

- identify the system setup record.
- power up the printer in the online mode.
- use the default prompt value.
- print a separator after each batch.
- print zeros with slashes through them.
- use the internal symbol set.



The `I` parameter is only needed if you send these records separately. (If you are sending multiple records, the `I` parameter is only needed once.) You must resend the format to the printer before the batch separator, slashed zero, and symbol set changes take effect.

Record B: Supply Setup

Use the Supply Setup record to select

- the type of supply to use.
- ribbon installation.
- how the supply feeds through the printer.
- the supply position.

Use the following syntax for the Supply Setup record:

Syntax
```
{I,B,supply_type,ribbon_on,feed_mode,
supply_posn ¦ }
```

The following table describes each parameter you can set using the Supply Setup record.

Parameter	Options	Description
identifier	B	Supply Setup Record
supply_type	**0**	Black mark stock loaded
	2	Non Indexed stock loaded
ribbon_on	0	Ribbon not installed (direct supply)
	1	Ribbon installed (transfer supply)
feed_mode	0	Continuous operation
	1	On-demand mode
supply_posn	**0** -99 to 99	Supply position in 1/192 dots



The default values are shown in bold.

Example `{I,B,0,0,1,10 ¦ }`

This record would

- identify the supply setup record.
- indicate black mark stock has been loaded.
- indicate thermal direct supply has been loaded.
- cause the printer to operate in on-demand mode.
- feed the supply approximately 2 inch at a time before printing the format on each label (10/192 inches).



The `I` parameter is only needed if you send these records separately. (If you are sending multiple records, the `I` parameter is only needed once.) You must resend the format to the printer before the feed mode change takes effect.

Record C: Print Control

Use the Print Control record to set

- contrast adjustment
- vertical adjustment
- horizontal adjustment
- print speed
- supply width.

Use the following syntax for a Print Control record:

Syntax
```
{I,C,contrast,print_adjust,margin_adjust,
speed_adjust,width_adjust ¦ }
```

The following table describes each parameter you can set using the Print Control record.

Parameter	Options	Description
Identifier	C	Print Control record
contrast	**0** -390 to 100	Contrast adjustment in .078 volts/count
print_adjust	**0** -99 to 99	Vertical adjustment in 1/192 dots
margin_adjust	**0** -99 to 99	Horizontal adjustment in 1/192 dots
speed_adjust	**0**	Print speed is 2 inches per second
width_adjust	**0** to 99	Width of the supply in dots



- The default values are shown in bold.
- If manually adjusting the print contrast does not give you the desired results, the print contrast can be adjusted on site, by a Monarch Service Representative. However, if the print is too dark, bar codes may not be scannable.
- You can use the margin adjust to align label information. (Incrementing the margin adjust shifts the print to the right. Decrementing the margin adjust shifts the print to the left.)
- The supply width defined here overrides the value defined in the format header. If this parameter is not defined, the supply width defined in the header is used. You may want to define your supply width here to force the printer to center justify across four inches for all your formats or left justify your formats at a certain point. If your format width is 3.2 inches or less, the image is centered across a 2-inch supply width. If your format width is greater than 3.2 inches, the image is centered across a 4-inch supply.

Example `{I,C,-200,-20,-10,0,0 ¦ }`

This record would

- identify the print control record.
- decrease the contrast by two volts.
- move print .1 inch closer to the bottom of the supply (20/192 inches).
- move print .05 inch more to the left on the supply (10/192 inches).
- print at 2 inches per second.
- set the supply width to 4 inches.



The `I` parameter is only needed if you send these records separately. (If you are sending multiple records, the `I` parameter is only needed once.) You must resend the format to the printer before the speed adjustment change takes effect.

Record D: Monetary Formatting

The Monetary Formatting record is used with a price field. Refer to Chapter 2, "Applying Field Options," for more information about Option **42**.

Use this record to

- select primary and secondary monetary symbols.
- designate the number of digits you want to appear to the right of a decimal.

Use the following syntax for the Monetary Formatting record:

Syntax `{I,D,dollar,secondary,decimals ¦ }`

This table describes each parameter you can set using the Monetary Formatting record.

Parameter	Options	Description
Identifier	D	Monetary Formatting Record
dollar	0	No symbol
	1	USA (Dollar)
	2	UK (Pound)
	3	Japan (Yen)
	4	Germany (Deutsche Mark)
	5	France (Franc)
	6	Spain (Peseta)
	7	Italy (Lira)
	8	Sweden (Krona)
	9	Finland (Markka)
	10	Austria (Shilling)
	11	India (Rupee)
	12	Russian (Ruble)
	13	Korean (Won)
	14	Thai (Baht)
	15	Chinese (Yuan)
secondary	**0** 1	No secondary sign Print secondary sign
decimals	0 1 **2** 3	Number of digits to the right of the decimal



The default values are shown in bold.

Example `{I,D,5,0,1 ¦ }`

This record would

- identify the monetary format record.
- print the Franc symbol.
- eliminate the use of any secondary sign.
- place only one digit to the right of the decimal.



The `I` parameter is only needed if you send these records separately. (If you are sending multiple records, the `I` parameter is only needed once.)

Record E: Control Characters

Use this record to

- change the MPCLII control characters.
- enable and disable the immediate commands.
- change the default terminator character for job requests and ENQ's.

Use this record to change control characters that conflict with characters you need to use. Changes take effect with the first character following the end of packet character **}** of the configuration record. Each control character must be unique and cannot appear anywhere else in your packet, except within quotation marks. You can customize the trailer characters to work with your terminal.

Use the following syntax for the control characters record. Notice all but the first parameter are within quotation marks:

Syntax `{I,E,"ANSI_codes",string1","string2" ¦ }`



You must include the first five parameters in this record, even if you do not change them. The other parameters are optional.

The following table describes each parameter you can set with the Control Characters record.

Parameter	Original Setting	Description
Identifier	E	Control Characters Record
{ (left bracket)	~123	Start of Packet
, (comma)	~044	Parameter separator (delimiter)
" (quotes)	~034	Quoted character string
¦ (pipe sign)	~124	Field separator
} (right bracket)	~125	End of packet
~~ (double tilde)	~126	Data escape character
must be user defined	any 1 character in the 0 to 255 hex range	Immediate command character
string 1	0 to 3 characters each in the 0 to 255 hex range **NOTE:** The default is none. Sending "" disables this sequence.	Terminator for status requests
string 2	0 to 3 characters each in the 0 to 255 hex range **NOTE:** The default is "CRLF".	Terminator for job requests and data uploads.



- The values shown are the defaults.
- After you change these parameters, all packets, including any future configuration packets, must use the new control characters. Pitney Bowes recommends using the tilde and ASCII character code sequence when sending this record multiple times. You must send record **E** to enable the immediate commands. An immediate command will execute immediately, even if it is embedded within quotation marks, and all data following the command in the string will be ignored. Pitney Bowes also recommends that you set the packet delimiters to characters within the 21 hex to 7E hex range.

Example `{I,E,"~123~063~034~124~125~126~094" ¦ }`

This record would

- change only the parameter separator character to **?**. The other control characters would remain unchanged.
- enable the immediate commands, using the ^ symbol as the command identifier.



The `I` parameter is only needed if you send these records separately. (If you are sending multiple records, the `I` parameter is only needed once.)

Resetting Control Characters

You can change the characters in the previous example back to their original settings by downloading this packet:

```
{I?E?"~123~044~034~124~125~126~094" ¦ }
```

Notice that the parameter separator is ? in this packet. This is the parameter separator that was set before this packet. Once the packet is received by the printer, the new parameter separator (a comma, in this case) is valid.



Be careful when using this feature. If you forget what the control characters were changed to, print a test label. (The test label lists the current control characters.) Refer to Chapter 10, "Diagnostics," for details on printing a test label.

Record F: Communication Settings

The printer's communication values must match the host's. Use this record to set your printer's communication values.

Use the following syntax for the Communication Settings record:

Syntax `{I,F,baud,word_length,stop_bits,parity,flow_control ¦ }`



Changing the communication settings takes approximately two seconds to complete. Communications during this interval may be lost.

The following table lists all the parameters you can set using the Communication Settings record.

Parameter	Options	Description
Identifier	F	Communication Settings Record
baud	0 1 2 **3** 4	1200 2400 4800 9600 19.2K
word_length	0 **1**	7-bit data frame 8-bit data frame
stop_bits	**0** 1	1-stop bit 2-stop bits
parity	**0** 1 2	none ODD parity EVEN parity
flow_control	0 **1** 2 3	None DTR CTS/RTS XON/XOFF



The default values are shown in bold.



- If you use the COPY command to download your formats, set "Flow Control" to **DTR** (not XON/XOFF).
- Always make sure the communications values at the host match the values on your printer, or you will not be able to print formats.

Example `{I,F,3,1,0,0,1 ¦ }`

This record would

- identify the communication settings record.
- use a baud rate of 9600.
- use a word length of 8 bits.
- use a 1-stop bit.
- not use a parity bit.
- use the DTR mode.

Immediate Commands

Immediate commands affect printer operation as soon as the printer receives them, even if they are included within a packet. These commands can be used at any time, but the printer can accept only one immediate command at a time, or else an error may occur.

You can use immediate commands to

- change immediate command control characters.
- change status polling control characters.
- reset the printer.
- cancel and repeat batches.
- clear errors.
- print a test label.

Enabling Immediate Commands

You must first send configuration Record **E** to enable the immediate commands. The immediate command control character is kept after you turn the printer off. To change the settings, see "Record **E**: Control Characters" earlier in this chapter.

The immediate command character can be set to any character in the 0 to 255 hex range. The carat symbol (^) is used for these examples. However, if you are sending information over a network, use ~038, which is the ampersand symbol (&).

Sending Immediate Commands

Immediate commands consist of a three- or four-character sequence you can send in a packet or embed in your application. Each command is sent separately.

Syntax `control character_immediate command`

Command	Parameter
^CA	Cancels all the batches in the queue.
^CB	Cancels only the current batch being printed.
^DD or DCd	Disables the MPCL data escape character and inhibits MPCL from acting on ANY data escape sequence from the host. Sets the MPCL data escape character to the ACSII value given by the **d** parameter. The value can be any ASCII character.
^EA	Aborts an error condition. May need to be sent multiple times. **CAUTION:** Command causes the current batch to stop and the condition that caused the error to remain uncorrected.
^ER	Resets the error. This command is the same as pressing the trigger to acknowledge an error. Normal operation will resume.
^FD	Feeds a label when printer is **idle**. Simulates the operation of the trigger and dispenses the next label if printer is in the on-demand mode. **NOTE:** Printer ignores this command if printing.
^ID or ^ICd	Disables the Immediate Command feature by turning off the Immediate Command escape character. d is the ASCII value of the new control character. Sets the Immediate Command escape character to the ASCII value given by the **d** parameter. The value can be any ASCII character.
^MM	Used to identify the model number. 50 = J640/J641
^MP	Used to identify the prototype number. (**00** to **99**)
^MR	Used to identify the revision number. (**00** to **99**)
^MV	Used to identify the version number. (**00** to **99**)
^PR	Resets the printer. This command takes five seconds to complete. **CAUTION:** Command should be used only when the printer is not printing.
^RB	Repeats the last printed batch, printing the same number of labels as specified in the original batch. **NOTE:** Printer ignores this command if printing.
^RS	Resynchronizes supply when supply roll is changed. Printer sends the next label to the printhead so printing begins at beginning of the label. **NOTE:** Printer ignores this command if printing.
^SD or ^SCd	Disables the status polling feature by turning off the status polling control character. **d** is the ASCII value of the new control character. Sets the status polling control character to the ASCII value given by the **d** parameter. The value can be any ASCII character.
^TP	Prints a test label. **NOTE:** Printer ignores this command if printing.

This table assumes that the defined Immediate Control character is ^ and that the defined Status Polling Control character is **d**. You may define these characters to suit your needs.

Example ^CB

This command immediately cancels the batch currently printing.



To use the Immediate Control character or the Status Polling character within your data, use the tilde sequence.

Special Packets

The following packets, Clear Packets, Font Packets, and the Printer Upload Configuration Packet, can

- clear a specific packet or font from memory.
- upload a specific packet or font.
- return information about font packet sizes, or the current buffer sizes.

Clearing Packets from Memory

You may want to remove packets from the printer to increase memory storage capacity or if the formats or fonts are no longer needed.

There are two ways to clear a format from the printer's memory:

- Turn the printer off. All formats, graphics, and check digit schemes are cleared from the printer's memory.
- Send a Format Clear Packet.

Syntax `{header,packet#,action,device ¦ }`

The following table lists the parameters you can use with the Clear Packet.

Parameter	Options	Description
header	A B F G W	Check Digit Packet Batch Packet Format Packet Graphic Image Packet Fonts Packet
packet#	packet (1-999) font number (0-9999)	Number of the packet or font to clear
action	C	clear the packet
storage device	N R T	Non-volatile RAM Volatile RAM Temporary

Example `{F,1,C,R ¦ }`

This example would

- clear Format 1
- from volatile RAM

Using Font Packets

You can use a Font Packet to clear downloaded fonts from memory, upload your font buffer, or upload the cell size information for a particular font. The font packet is useful when you are downloading soft fonts.

Syntax `{W,font_number,action,device ¦ }`

The following table lists each parameter you can use with the Font Packet.

Parameter	Options	Description
header	W	Writable Font Header
font#	0-9999	Font number **0** is for all fonts
action	C H M	Clears specified fonts Uploads Font Size information Uploads Font Memory Usage information
device	N R Z	Non-volatile RAM Volatile RAM All devices (use for upload)

Example `{W,0,M,R ¦ }`

This example would

- select all fonts.
- check the Memory Usage in volatile RAM.

The printer returns the following to the host:

```
{W,0,M,N ¦
Number of bytes free, Number of bytes used ¦
Font #1, Number of bytes Font #1 used ¦
Font #2, Number of bytes Font #2 used ¦
.
.
.
Font #nnnn, Number of bytes Font #nnnn used ¦ }
```

Printer Configuration Upload Packet

You can now upload your printer's current configuration using Configuration Control Packets. To request the configuration upload, send the following packet to the printer:

Syntax `{header,ID#,action ¦ }`

The following table lists the parameters you can use with the Printer Configuration Upload Packet.

Parameter	Options	Description
header	I	Online Header
ID#	0	Configuration ID number
action	U	Upload User Configuration

Example `{I,0,U ¦ }`

This example would return the following to the host:

```
A,0,0,0,0,0 ¦
B,1,1,0,0,0 ¦
C,0,0,0,0,768 ¦
D,1,0,2 ¦
E,"~123~044~034~124~125~126","","~013~010"  ¦
F,1,1,0,0,1 ¦
```

Refer to the sections on Records **A**-**F** for the meaning of each of the uploaded values.

Chapter 6. Printing

This chapter describes how to download files to the printer.

Turn the printer on and make sure it is ready to receive data before you download.

See your host documentation or system administrator for information on downloading from your particular host. See the "Downloading Methods" section later in this chapter for information on ways to download.

When downloading, send your data streams in this order:

1. Configuration records (Records **A**-**F**)
2. Any of the following:
   - ✦ Check digit packets (see Chapter 3)
   - ✦ Format packets (see Chapter 1)
   - ✦ Graphic packets (see Chapter 9)
3. Batch data (see Chapter 4)

To download from a PC:

1. Check that the PC and the printer are connected.
2. Check that communications have been established between the PC and the printer.
3. Send Configuration Record **F** to select the printer's communication settings. Refer to Chapter 5, "Configuring the Printer," for more information.

4. Type these commands at the DOS prompt:

   ```
   COPY LABEL1.FMT COM1
   ```

   This command transmits a file called "LABEL1.FMT" to COM1.

   ```
   COPY LABEL1.BCH COM1
   ```

   This command transmits a batch called "LABEL1.BCH" to COM1.



If you use the COPY command to download your formats, set "Flow Control" to **DTR** (not XON/XOFF). Also, do not use the MS-DOS prompt from inside Windows, because you will get a framing error.

Downloading Methods

Depending on your application, you can download format and batch data using one of three methods:

- Sequential Method
- Batch Method
- Batch Quantity Zero Method

Sequential Method

With the sequential method, you send all your format and batch data at one time. Use this method when your application does not require operator intervention to input data. All data is sent down at one time, and the printer then images each field. As soon as the last field is imaged, your labels begin to print.

Example

```
{Format}

{Batch Data}
```

Batch Method

This is similar to the sequential method, but it is used when you want to send multiple batches. All data for the first batch is sent down at one time, and the printer then images each field. As soon as the last field for the first batch is imaged, your labels begin to print for that batch. This process is repeated for each subsequent batch.

Example

```
{Format}

{Batch Data}

{Batch Data}

{Batch Data}
```

Batch Quantity Zero Method

You should use the Batch Quantity Zero method when your application requires operator intervention to enter data. While the operator is entering data, the previous field is sent with a batch quantity of zero. The printer images the field, but does not print it. After the operator enters the data for the last field, the batch quantity can be specified. The last remaining field is imaged, and the label prints almost immediately.

You can follow this procedure when using the Batch Quantity Zero method:

1. Send the format and a batch header in one file. The first time you send batch information at the prompt, use the parameter **N** (new batch), and the parameter **0** for (zero quantity). This ensures the label is properly positioned.

Your file should look like this:

```
{
F,1,A,R,E,300,200,"TEXTILES" ¦
B,1,12,V,150,40,0,1,2,80,7,L,0 ¦
T,2,10,V,250,50,0,1,1,1,B,C,0,0 ¦
D,3,3 ¦
D,4,20 ¦
T,5,25,V,80,10,0,1,1,1,B,L,0,0,0 ¦
R,4,4,1,20,6,1p
C,30,10,0,1,1,1,B,L,0,0,"Made in USA" ¦
L,S,110,30,270,150,3,"" ¦
Q,240,30,270,150,3,"" ¦
}
{
B,1,N,0 ¦
}
```

The printer images the constant text, line, and box fields, but does not print them.

2. Input data for each field, and send it with a batch *update* with a quantity of zero. When the printer receives the data, it immediately images the field, but does not print it.

Your file should look like this:

```
{
B,1,U,0 ¦
1,"24681012141" ¦
}
```

At this time, the printer is imaging all associated fields, including fields that copy from other fields.

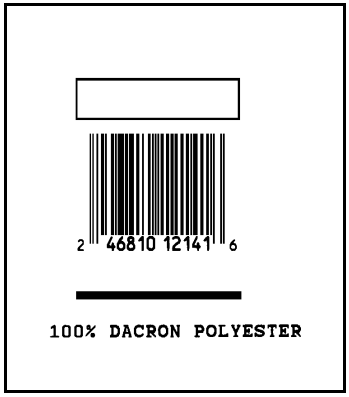
3. Repeat step 2 for each field except the last one.

4. For the last field, input data and send it with the quantity of labels you want printed. When the printer receives input for the last field, it immediately prints the labels.

   Your file should look like this:

```
{
B,1,U,10 ¦
5,"100% DACRON" ¦
C,"POLYESTER" ¦
}
```

   Ten labels that look like this are printed:



Modifying Formats

The Optional Entry Method is a quick way to modify your format fields, check digit fields, and configuration commands.

Optional Entry Method

This method enables you to reset only the parameters you want to change. Commas act as placeholders for unchanged parameters. The Optional Entry Method reduces file size and increases the speed at which files are sent to the printer.



You should understand the basics of each file format before using this method.

Chapter 7. Syntax Quick Reference

This chapter provides a quick reference for creating MPCLII data streams.

MPCLII Conventions

Here are some guidelines to follow when using MPCLII.

MPCLII Punctuation

Use the following symbols when creating MPCLII data streams:

{	Start of packet
}	End of packet
¦	Field separator
,	Parameter separator
"ABC"	Quotation marks enclose character strings. Empty quotes ("") identify null strings or unused fields.
‘comment‘	Grave accents enclose comments. Any data enclosed in grave accents is ignored. Do not embed comments within a quoted string. Grave accents are also used to reject mainframe data.



These MPCL characters are the default. You can change these characters by using Record **E**. Refer to Chapter 5, "Configuring the Printer," for more information.

Standard Syntax Guidelines

When creating MPCLII packets

- Begin each packet with a **Start of Packet**.
- End each packet with an **End of Packet**.
- Define no more than **100** fields in a format.
- Define all fields in the order you want to image/print them. The printer does not print in field number order.
- Separate all parameters with a **Parameter Separator**.
- End each field with a **Field Separator**.
- Enter all information in CAPITAL letters, except words or phrases within quotation marks.
- Include all parameters for a field unless documented as optional.
- Define non-printable text fields immediately before the field to which they apply.
- Define options immediately after the field to which they apply.
- Multiple options can be used with most fields. Options can be used in any combination except as noted with each definition.
- Keep in mind that proportionally spaced fonts need wider fields than monospaced fonts.
- Do not place a new line (return) or any other non-printing character in a character string.
- Spaces are ignored, except within character strings.
- Use a tilde (~) followed by a 3-digit ASCII code in a quoted string to send function codes or extended characters or send the 8-bit ASCII code.
- Enter fields in numerical order.

Defining the Format Header

A Format Header begins a format file. The format header is followed by a series of fields that determines text, non-printable text, bar code, constant text, line, or box definitions.

Example `{F,1,A,R,E,300,200,"TEXTILES" ¦`

Syntax `{F,format#,action,device,measure,length,width,"name" ¦`

F1. F — Indicates format header. Enter **F**.

F2. format# — Unique number from **0-999** to identify the format. (Pitney Bowes recommends starting at **1**, instead of 0.)

F3. action — Enter **A** to add a new format to the printer.

F4. device — Format storage device. **R** is the only valid value.

F5. measure — Unit of measure. Options:

E English. Measured in 1/100 inches.
M Metric. Measured in 1/10 mm.
G Graphic. Measured in dots.

F6. length — Supply length, in units selected above. Measure supply top to bottom. The bottom is the edge that exits the printer first:

English	**100 - 600**
Metric	**254 - 1524**
Dots	**192 - 1152**

F7. width — Supply width, from left to right, in units selected above:

English	**120 - 400**
Metric	**305 - 1016**
Dots	**230 - 768**

F8. "name" — Assign a format name, if desired. **1-8** characters. *Enclose in quotation marks*.

Defining Text Fields

Example `T,2,10,V,250,50,0,1,1,1,B,C,0,0,0 ¦`

Syntax

```
T,field#,# of char,fix/var,row,column,gap,font,
hgt mag wid mag,color,alignment,char rot,
field rot,sym set ¦
```

T1. T — Indicates a text field. Enter **T.**

T2. field # — Unique number from **0-99** to identify this field. (Pitney Bowes recommends starting at **1**, instead of 0.)

T3. # of char — Maximum number of printed characters (**1-2710**) in the field.

T4. fix/var — Fixed or variable length field. Options:

- **F** Fixed length
- **V** Variable length

T5. row — For monospaced fonts, distance from bottom of print area to lower left corner of field. For proportionally spaced fonts, distance from bottom of print area to baseline of characters in field. (Bottom exits the printer first.) Ranges:

English	**0 - 599**
Metric	**0 - 1523**
Dots	**0 - 1151**

T6. column — Distance to lower left corner of field, from left edge of print area. Ranges:

English	**0-399**
Metric	**0-1014**
Dots	**0-767**

T7. gap — Number of dots between characters. Ranges: **0-99**.

T8. font Style of font. Options:

1	Standard	**4**	OCRA-like
2	Reduced	**10**	CG Triumvirate
3	Bold	**11**	CG Triumvirate Bold

T9. hgt mag Height magnifier, **1-7** (times).

T10. wid mag Width magnifier, **1-7** (times).

T11. color Options:

B	Opaque, Black
D	Opaque, White
O	Transparent, Black
R	Transparent, White
W	Opaque, White

T12. alignment Options:

L	Align on left side of field.
C	Center text within field (monospaced fonts only)
R	Align on right side of field (monospaced fonts only)
B	Align at midpoint of field
E	Align at endpoint of the field

T13. char rot Character rotation. Options:

0	Top of character points to top of field
1	Top of character points to left of field
2	Top of character points to bottom of field
3	Top of character points to right of field

T14. field rot Field rotation. Lower left corner of field is the pivot point. Options:

0	Top of field points to top of supply
1	Top of field points to left of supply
2	Top of field points to bottom of supply
3	Top of field points to right of supply

T15. sym set Symbol set. Options:

0	Internal Symbol Set
1	ANSI Symbol Set
437	DOS Code Page 437 (Domestic)
850	DOS Code Page 850 (International)

Defining Bar Code Fields

Example `B,3,12,V,150,40,1,2,80,7,L,0 ¦`

Syntax `B,field#,# of char,fix/var,row,column,font, density,height,text,alignment,field rot ¦`

B1. B — Indicates bar code field. Enter **B**.

B2. field # — Unique number from **0-99** to identify this field. (Pitney Bowes recommends starting at **1**, instead of 0.)

B3. # of char — Maximum number of characters. Range: **1-2710**.

B4. fix/var — Fixed or variable length field. Options:

F Fixed length
V Variable length field.

B5.row — Distance from bottom of print area to lower left corner of the field. (The bottom exits the printer first.) Ranges:

English **0 - 599**
Metric **0 - 1523**
Dots **0 - 1151**

B6. column — Distance to the lower left corner of the field from the left edge of print area. Ranges:

English **0 - 399**
Metric **0 - 1014**
Dots **0 - 767**

B7. font Bar code. Options:

1	UPCA
2	UPCE
3	Interleaved 2 of 5
4	Code 39 (no check digit)
5	Codabar
6	EAN8
7	EAN13
8	Code 128
9	MSI
10	UPCA +2
11	UPCA +5
12	UPCE +2
13	UPCE +5
14	EAN8 +2
15	EAN8 +5
16	EAN13 +2
17	EAN13 +5
22	POSTNET
23	Code 93
31	Code 16K
32	PDF417
33	Maxicode
40	Code 39 (MOD 43 check digit)
41	UPCA & Price CD
44	EAN13 & Price CD
50	Interleaved 2 of 5 with Barrier Bar

B8. density Bar code density. Refer to the chart in Chapter 1, "Designing a Format."

B9. height Bar code height, in 1/100 inches, 1/10 mm, or dots. Minimum values:

English	**20**
Metric	**51**
Dots	**38**

B10. text Appearance of text with bar code. Options:

- **0** Default
- **1** No check digit or number system
- **5** Number system at bottom, no check digit
- **6** Check digit at bottom, no number system
- **7** Check digit and number system at bottom
- **8** No text, bar code only

B11. alignment Choose **L**, **R**, **C**, **B** or **E**.

B12. field rot Field rotation. Lower left corner of field is the pivot point. Options:

- **0** Top of field points to top of supply
- **1** Top of field points to left of supply
- **2** Top of field points to bottom of supply
- **3** Top of field points to right of supply

Defining Non-Printable Text Fields

Example `D,4,20 ¦`

Syntax `D,field#,# of char ¦`

D1. D	Indicates a non-printable text field. Enter **D**.
D2. field#	Unique number from **0-99** assigned to this field. (Pitney Bowes recommends starting at **1**, instead of 0.)
D3. # of char	Maximum number of characters in this field (**1-2710**).

Defining Constant Text Fields

Example `C,30,10,0,1,1,1,B,L,0,0,"MADE IN USA",0 ¦`

Syntax

```
C,row,column,gap,font,hgt mag,wid mag,color,
alignment,char rot,field rot,"fixed char",
sym set ¦
```

C1. C — Indicates a constant text field. Enter **C**.

C2. row — For monospaced fonts, distance from bottom of print area to lower left corner of field. For proportionally spaced fonts, distance from bottom of print area to baseline of characters in the field. (Bottom exits the printer first.) Ranges:

English	**0 - 599**
Metric	**0 - 1523**
Dots	**0 - 1151**

C3. column — Distance to lower left corner of field, from left edge of print area. Ranges:

English	**0 - 399**
Metric	**0 - 1014**
Dots	**0 - 767**

C4. gap — Number of dots between characters. Range: **0-99**.

C5. font — Style of font. Options:

1	Standard	**4**	OCRA-like
2	Reduced	**10**	CG Triumvirate
3	Bold	**11**	CG Triumvirate Bold

C6. hgt mag — Height magnifier, **1-7** (times).

C7. wid mag — Width magnifier, **1-7** (times).

C8. color — Options:

B	Opaque, Black
D	Opaque, White
O	Transparent, Black
R	Transparent, White
W	Opaque, White

C9. alignment Alignment of constant text in the field. Options:

- **L** Align on left side of field.
- **C** Center text within field (for monospaced fonts only)
- **R** Align on right side of field (for monospaced fonts only)
- **B** Align at midpoint of field
- **E** Align at end of field.

C10. char rot Character rotation. Options:

- **0** Top of character points to top of field
- **1** Top of character points to left of field
- **2** Top of character points to bottom of field
- **3** Top of character points to right of field

C11. field rot Field rotation. Lower left corner of field is the pivot point. Options:

- **0** Top of overlay points to top of supply
- **1** Top of overlay points to left of supply
- **2** Top of overlay points to bottom of supply
- **3** Top of overlay points to right of supply

C12. "fixed char" Fixed characters to appear in the field. Maximum **2710** characters. Enclose in quotation marks.

C13. sym set Symbol set. Options:

- **0** Internal Symbol Set
- **1** ANSI Symbol Set
- **437** DOS Code Page 437 (Domestic)
- **850** DOS Code Page 850 (Multilingual)

Defining Line Fields

Example `L,S,110,30,110,150,10,"" ¦`

Syntax `L,type,row,column,angle/end row,length/end col, thickness,"pattern" ¦`

L1. L — Indicates a line field. Enter **L**.

L2. type — Type of line. Only vertical and horizontal lines are supported. Options:

- **S** Segment. You choose the starting point and ending point.
- **V** Vector. You choose the starting point, angle, and length.

L3. row — Distance from bottom of print area to line origin. Measure in 1/100 in., 1/10 mm, or dots. Ranges:

English	**0 - 599**
Metric	**0 - 1521**
Dots	**0 - 1150**

L4. column — Distance from left edge of the print area to line origin. Measure in 1/100 in., 1/10 mm, or dots. Ranges:

English	**0 - 399**
Metric	**0 - 1014**
Dots	**0 - 767**

L5. angle/ end row

If Using *Segments*

Row location of end point. Measure from bottom of print area. Ranges same as above. On horizontal lines, this value must match item **L3**.

If Using *Vectors*

Angle of line. Options: **0**, **90**, **180**, or **270**.

L6. length/ end col

If Using *Segments*

Column location of end point. Measure from left edge of print area. Ranges same as above. On vertical lines, this value must match parameter **L4**.

If Using *Vectors*

Length of the line in selected units.

Ranges for horizontal lines:

English	**0 - 400**
Metric	**0 - 1016**
Dots	**0 - 768**

Ranges for vertical lines:

English	**0 - 600**
Metric	**0 - 1524**
Dots	**0 - 1152**

L7. thickness Line thickness **1-99**. Measured in dots.

L8. "pattern" Line pattern. Only one pattern is supported on this printer. Enter "".

Defining Box Fields

Example `Q,240,30,270,150,3,"" ¦`

Syntax `Q,row,column,end row,end col,thickness, "pattern" ¦`

Q1. Q — Indicates a box (**Q**uadrilateral) field. Enter **Q**.

Q2. row — Distance from *bottom* of print area to *lower left* corner of box. Measure in 1/100 in., 1/10 mm, or dots. Ranges:

English	**0 - 599**
Metric	**0 - 1521**
Dots	**0 - 1150**

Q3. column — Distance from *left edge* of print area to *lower left* corner of box. Measure in 1/100 in., 1/10 mm, or dots. Ranges:

English	**0 - 399**
Metric	**0 - 1014**
Dots	**0 - 767**

Q4. end row — Distance from *bottom* of print area to *upper right* corner of box. Ranges same as *row* above.

Q5. end col — Distance from *left edge* of print area to *upper right* corner of box. Ranges same as *column* above.

Q6. thickness — Line thickness. Range: **1-99**. Measure in dots. Thickness fills to center of box.

Q7. "pattern" — Line pattern. Only one pattern is supported on this printer. Enter `""`.

Applying Field Options

Example `R,1,3,1,3,1,1 ¦`

Syntax `R,option#,parameter...parameter ¦`

R1. R Indicates field option header.

R2. option# Option number:

1	Define fixed characters
4	Copy data from previous field
30	Pad data to left or right with specified character
31	Generate check digit
42	Format as a price field
50	Define bar code densities
51	Define security and truncation of PDF417 bar codes
52	Define width or length of PDF417 bar codes
60	Define incrementing or decrementing field
61	Reimage fields

R3. parameter(s) Varies per option. See the following option descriptions.

Option 1 (Fixed Data)

Example `R,1,"_ _ _%$_ _ _ _ _" ¦`

Syntax `R,1,"fixed char" ¦`

R1. R Indicates option header.

R2. 4 Indicates Option **1**.

R3. fixed char Characters to insert. Enclose in quotation marks. If you are defining fixed characters for part of a field, place underscores (_) in non-fixed positions.

NOTE: Underscore characters are stripped out and the data is compressed if no data is supplied by the batch and the field length is variable.

Option 4 (Copy Data)

NOTE: When copying from more than one field, copy into the destination field from left to right.

Example `R,4,3,1,3,1,1 ¦`

Syntax `R,4,src fld,src start,# to copy,dest start, copy code ¦`

R1. R Indicates option header.

R2. 4 Indicates Option **4**.

R3. src fld Field number from which data is copied.

R4. src start Position number in the source field of the first character to be copied.

R5. # to copy Number of characters to copy.

R6. dest start Position number where copied characters are to begin printing in the destination field.

R7. copy code Copy Method.

1 Copy field as is (including price symbols, pad characters, check digits, etc.).

2 Copy unformatted data (without price characters, pad characters, etc.).

Option 30 (Padding Data)

If a variable length field is not completely filled with batch data, this option fills the remaining positions in the field with the character **X**.

Example `R,30,L,"X" ¦`

Syntax `R,30,L/R,"character" ¦`

R1. R Indicates option header.

R2. 30 Indicates Option **30**.

R3. L/R Indicates type of padding

- **L** Pad field on left side
- **R** Pad field on right side

R4. "character" Pad character (must be printable). Character must be enclosed inside quotation marks.

NOTE: Do Not use on fixed length fields.

Option 31 (Calculate Check Digit)

Do not use this option with Option **42**, Maxicode, Code 39, or Code 93 bar codes, or fields with predefined check digits, such as UPC, EAN, and Code 128 bar code fields.

Example `R,31,G,5 ¦`

Syntax `R,31,gen/ver,check digit # ¦`

R1. R	Indicates option header.
R2. 31	Indicates Option **31**.
R3. gen/ver	Enter **G** to generate a check digit.
R4. check digit #	Specifies a check digit scheme. Enter a number that identifies a check digit scheme that has been defined. For more information, refer to Chapter 3, "Using Check Digits."

Option 42 (Price Field)

Do not use with Options **31** or **60**.

Example `R,42,1 ¦`

Syntax `R,42,appearance code ¦`

R1. R	Indicates option header.
R2. 42	Indicates Option **42**.
R3. appearance code	Enter **1** to print price field in standard notation, as defined by country setting. Use Configuration Record **D**, Monetary Formatting, to select monetary notations and symbols by country setting. For more information on configuration control records, refer to Chapter 5, "Configuring the Printer."

Option 50 (Bar Code Density)

When using this option, set the density parameter in your bar code field to the default value. You can only use this option once for each bar code field.

This option overrides the density selected in the bar code field. Do not use this option with POSTNET or Maxicode bar codes. If you use this option with a bar code that contains only narrow elements, set the wide element equal to the narrow element. (I 2 of 5, Code 39, Codabar, and MSI bar codes have both narrow and wide elements.)

Example `R,50,4,8,5,1,1 ¦`

Syntax `R,50,narrow,wide,gap,nar_space,wide_space ¦`

R1. R Indicates option header.

R2. 50 Indicates Option **50**.

R3. narrow Dot width of the narrow element. (Code 39 and Codabar only.) Enter a value of **2-99**.

R4. wide Dot width of the wide element. (Code 39 and Codabar only.) Enter a value of **2-99**. For PDF417 bar codes, this will be the height of each element (or row).

R5. gap Additional dot width between characters. Enter a value of **1** to **99** in printer dots.

R6. nar_space Additional dot width of the narrow bar code space. (Code 39 and Codabar only.) Enter a value of **1** to **99** in printer dots.

R7. wide_space Additional dot width of the wide bar code space. (Code 39 and Codabar only.)

NOTE: Pitney Bowes recommends using only the densities specified in the bar code density table in Chapter 1, "Designing a Format," because the bar codes produced using Option **50** may not be scannable. The Additional Character Gap, Narrow Space, and Wide Space parameters are valid **only** with Code 39 and Codabar. If these parameters are specified for any other bar codes, they will be ignored by the printer.

Option 51 (PDF417 Security/Truncation)

This option can appear only once per PDF417 field, in any order, following the bar code field.

Example `R,51,2,S ¦`

Syntax `R,51,security,stand/default ¦`

R1. R Indicates option header.

R2. 51 Indicates Option **51**.

R3. security Security level ranges from **0-8** (**0** is the default).

Higher security levels add data to a bar code, improving scan reliability. Some damaged bar codes may still be scannable if the security level is high enough.

R4. stand/def Truncation selector. Valid values:

S (default) a standard PDF417 bar code
T truncated

Option 52 (PDF417 Width/Length)

If this option does not immediately follow the PDF417 bar code field, the default settings are used. You can only use this option once per PDF417 bar code field.

Example `R,52,C,10 ¦`

Syntax `R,52,row/column,dimension ¦`

R1. R Indicates option header.

R2. 52 Indicates Option **52**.

R3. row/column Indicates if you are defining the number of rows or columns.

R Row
C Column

If you specify rows, the bar code expands in columns, or vice versa.

R4. dimension The number of rows or columns defined for the bar code. The default is **4**. Valid values:

3-90 for rows
1-30 for columns

NOTE: Column value does not include start/stop or left/right row indicator columns.

Option 60 (Incrementing/Decrementing Fields)

Do not use with Option **42** (price field), because this option can be applied to numeric data only.

Example `R,60,I,5,1,6 ¦`

Syntax `R,60,I/D,amount,l pos,r pos ¦`

R1. R	Indicates option header.
R2. 60	Indicates Option **60**.
R3. I/D	**I** incrementing field. **D** decrementing field
R4. amount	Amount by which value increases or decreases.
R5. l pos	Leftmost position in inc/dec portion of field. If this value is not entered, the default value **1** is used.
R6. r pos	Rightmost position in inc/dec portion of field. If this value is not used, the entire field length is used as the default value.

Option 61 (Reimage Field)

This option applies to text, bar code, constant text, line, or box fields.

Example `R,61 ¦`

Syntax `R,61 ¦`

R1. R Indicates option header.

R2. 61 Indicates Option **61**.

Defining the Batch Header

A batch header begins the file. It tells which format the batch uses and how many labels to print.

Example `{B,1,N,1¦`

Syntax `{B,format #,N/U,quantity¦`

B1. B Batch header.

B2. format# Format number (**0-999**) to use. (Pitney Bowes recommends starting at **1**, instead of 0.)

B3. N/U Controls how image is generated.

- **N** New. Erase image and re-image all fields using online data. Any missing fields will be blank.
- **U** Update last image with 1 or more fields. All other fields remain the same as the last queued batch.

B4. quantity Quantity to print (**1-32000**).

Defining the Batch Control Field

The batch control field defines the print job and applies only to the batch that immediately follows. The Batch Header must precede this field.

Example `{E,0,1,4,2,0,0 ¦`

Syntax `{E,feed_mode,batch_sep,print_mult, multi_part,cut_type,cut_mult ¦`

E1. E Defines the data stream as a Batch Control Field.

E2. feed_mode Type of feed mode. Options:

0 Continuous Feed
1 On-Demand

E3. batch_sep Type of batch separator. Options:

0 Does not print a separator
1 Prints a separator

E4. print_mult Number of tags with the same image.

1 to **999**

E5. multi_part Number of identical parts on one tag.

1 to **5**

E6. cut_type **0** is the only valid option.

E7. cut_mult **0** is the only valid option.

Defining Batch Data Fields

Batch data fields should be sent in field number order.

Example

```
1,"Size 12" ¦
2,"" ¦
3,"Blue" ¦
C,"and this would be appended." ¦
```

Syntax

```
field#,"data string" ¦
C,"continuation" ¦
```

field#	Identifies the text, bar code, or non-printable text field in which to insert the following data.
"*data string*"	Provides the actual information to appear in the selected field. Always enclose inside double quotes.
C	Identifies information to be appended to the data string. (This parameter is optional.)
"*continuation*"	Provides the actual information to be added to the batch packet. Always enclose inside double quotes. Use this option to break up longer fields. (This parameter is optional.)

Applying Check Digits

Check digit algorithms are predefined for UPC and EAN bar codes.

Example `{A,1,A,R,10,5,P,"65432" ¦ }`

Syntax `{A,selector,action,device,modulus,fld_length,D/P,weights ¦ }`

A1. A	Indicates a check digit data stream. Enter **A**.
A2. selector	Assign a number from **1-10** to this check digit formula.
A3. action	Adds a check digit scheme. Enter **A**.
A4. device	Print storage device. **R** is the only valid option.
A5. modulus	Number from **2-11**. Modulus used in calculation.
A6. fld_length	Number of weighting digits used. Should equal the number of digits in the field, minus the check digit.
A7. D/P	Algorithm. Options: **D** sum of digits **P** sum of products
A8. weights	String of digits used for calculation. The number of digits in this string should equal the number in parameter #5 (field length).

Changing Printer Configurations

Example

```
{                                   Start of Packet
I,                                  Configuration Packet
                                    Identifier

1 to 6 optional records
A,0,0,0,0,0 ¦                       System Setup
B,0,0,0,0 ¦                         Supply Setup
C,0,0,0,0,0 ¦                       Print Control
D,1,0,2 ¦                           Monetary Formatting
E,"~123~044~034~124~125" ¦          Control Characters
F,3,1,0,0,1 ¦                       Communication Settings
}                                   End of Packet
```

Syntax

```
{
I,
A, parameter 1...parameter 5 ¦
B, parameter 1...parameter 4 ¦
C, parameter 1...parameter 5 ¦
D, parameter 1...parameter 3 ¦
E, parameter 1...parameter 9 ¦
F, parameter 1...parameter 5 ¦
 ¦
}
```

Configuration Syntax Guidelines

When creating a printer configuration packet:

- Follow the "Standard Syntax Guidelines" listed at the beginning of this chapter.
- Begin a packet with the printer configuration header (`I`).
- Download multiple configurations within one packet or download a single configuration.
- Include the first five ANSI codes, at a minimum, in Record **E** (Control Characters).
- Make sure the host settings match the settings contained in Record **F** (Communication Settings).
- Record the new configuration for future reference.

Defining the System Setup Record A

Example `{I,A,0,0,1,1,0 ¦ }`

Syntax `{I,A,online_mode,language,sep_on,slash_zero symbol_set ¦}`

A1. A Indicates System Setup Record

A2. online_mode Online mode. Options:
- **0** online mode (default)
- **1** offline mode

A3. language
- **0** English is the default

A4. sep_on Options:
- **0** Does not print a separator (default)
- **1** Prints a separator

A5. slash_zero Options:
- **0** Print a standard zero (default).
- **1** Print a zero with a slash through it

A6. symbol_set Options:
- **0** Internal (default)
- **1** ANSI
- **3** Code Page 437
- **4** Code Page 850

Defining the Supply Setup Record B

Example `{I,B,0,0,1,10 ¦ }`

Syntax `{I,B,supply_type,ribbon_on,feed_mode,supply_posn ¦}`

B1. B Indicates Supply Setup Record

B2. supply_type Options:

0	Black mark stock (default)
2	Non Indexed stock

B3. ribbon_on Options:

0	Ribbon not installed
1	Ribbon installed (default)

B4. feed_mode Options:

0	Continuous operation
1	On-demand mode (default)

B5. supply_posn **-99** to **99**

Defining the Print Control Record C

Example `{I,C,0,0,0,0,0 ¦ }`

Syntax

```
{I,C,contrast,print_adj,margin_adj,
speed_adj,width_adj ¦ }
```

C1. C	Indicates the Print Control record
C2. contrast	**390** to **156** in .078 volts/count
C3. print_adj	**-99** to **99**. Vertical adjustment in 1/192 dots
C4. margin_adj	**-99** to **99**. Horizontal adjustment in 1/192 dots
C5. speed_adj	Print speed is 2 inches per second.
C6. width_adj	**0** to **99**. Width of the supply.

NOTE: The default value for all of these options is **0**.

Defining the Monetary Formatting Record D

Example `{I,D,1,0,2 ¦ }`

Syntax `{I,D,dollar,secondary,decimals ¦ }`

D1. D Indicates the Monetary Formatting record

D2. dollar Options:

0	No symbol
1	USA (Dollar -default)
2	UK (Pound)
3	Japan (Yen)
4	Germany (Deutsche Mark)
5	France (Franc)
6	Spain (Peseta)
7	Italy (Lira)
8	Sweden (Krona)
9	Finland (Markka)
10	Austria (Shilling)
11	India (Rupee)
12	Russian (Ruble)
13	Korean (Won)
14	Thai (Baht)
15	Chinese (Yuan)

D3. secondary Options:

0	No secondary sign (default)
1	Print secondary sign

D4. decimals Number of digits to the right of the decimal. Options:

0	No digits
1	One digit
2	Two digits (default)
3	Three digits

Defining the Control Characters Record E

Example `{I,E,"~123~063~034~124~125~126~094" ¦ }`

Syntax `{I,E,"ANSI_cd",string1","string2" ¦ }`

E1. E Indicates the Control Characters record

E2. "ANSI_cd"

~123	Start of packet ({)
~044	Parameter separator (,)
~034	Quoted strings (")
~124	Field separator (¦)
~125	End of packet (})
~126	Data escape characters (~)
~094	Immediate command characters (^)

NOTE: There is no default value for the Immediate command character, because it must be set by the user.

E3. "string 1" Terminator for status requests. Any 3 characters in the 0 to 255 hex range.

E4. "string 2" Terminator for job requests and data uploads. Any 3 characters in the 0 to 255 hex range.

Defining the Communication Settings Record F

Changing the communication settings takes approximately two seconds to complete. Communications during this interval may be lost. Always make sure the communications values at the host match the values on your printer, or you will not be able to print formats.

Example `{I,F,3,0,0,0,0 ¦ }`

Syntax `{I,F,baud,word_length,stop_bits,parity, flow_control ¦ }`

F1. F *Indicates the Communication Settings Record*

F2. baud Options:

0	1200
1	2400
2	4800
3	9600 (default)
4	19.2K

F3. word_length Options:

0	7-bit data frame
1	8-bit data frame (default)

F4. stop_bits Options:

0	1-stop bit (default)
1	2-stop bits

F5. parity Options:

0	none (default)
1	ODD parity
2	EVEN parity

F6. flow_control Options:

0	None
1	DTR (default)
2	CTS/RTS
3	XON/XOFF

Clearing Packets from Memory

Example `{F,1,C,R ¦ }`

Syntax `{header,packet#,action,device ¦ }`

1. header Identifies the packet.

- **A** Check Digit Scheme
- **B** Batch
- **F** Format
- **G** Graphic
- **W** Font

2. packet# Identification number of the packet to clear (**1-999**) or font number (**0-9999**).

3. action Enter **C** to clear the packet.

4. device Storage device. Valid values:

- **N** Nonvolatile RAM
- **R** Volatile RAM
- **T** Temporary

Using Font Packets

Example `{W,0,M,R ¦ }`

Syntax `{W,font#,action,device ¦ }`

W1. W Indicates the Writable font header.

W2. font# Font number from **0-9999**.

W3. action Options:

- **C** Clears all or specified fonts.
- **H** Uploads Font Size information.
- **M** Uploads Font Memory Usage information.

W4. device Storage device:

- **N** Non-volatile RAM
- **R** Volatile RAM
- **Z** All devices (use for upload)

Printer Configuration Upload Packet

Example `{I,0,U ¦ }`

Syntax `{header,ID#,action ¦ }`

1. header	Constant `I`
2. ID#	Configuration ID (Constant **0**)
3. action	Upload User Configuration (Constant **U**)

Chapter 8. Status Polling

There are two types of Status Polling:

- Inquiry Request--information about the readiness of the printer
- Job Request--information about the current (or last received) job downloaded to the printer

Inquiry Request (ENQ)

An ENQ character acts as a request for printer status information. You can send an ENQ in front of, in the middle of, or immediately following any packet downloaded to the printer. An ENQ is a command that can be executed as part of a data stream or sent on its own (using a communications program). An ENQ is processed immediately. The ENQ character can be user defined.



The ENQ character does not appear as a visible character; however, we are representing the ENQ character as ENQ .

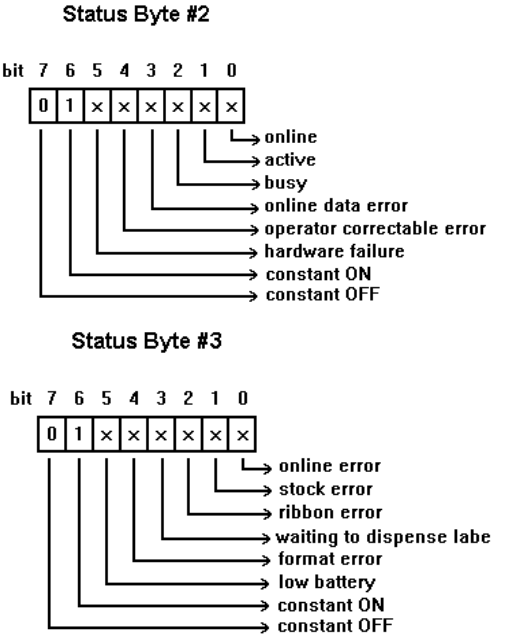
Inquiry Response (ENQ Response)

Printer status is returned to the host in a 3-byte (3-character) sequence. The first byte is the ENQ character. The second and third bytes are printer status codes. Refer to the ENQ Reference Tables for the meaning of the response characters.

Example: ENQ AB

The status codes (A and B in this case) are ASCII equivalents to the hexadecimal bits that represent the various types of status responses. This response indicates that the printer is online (Character A) and that there is a stock fault (Character B).

The following graphics can be used as a quick reference for the Status of Byte #2 and Byte #3.



ENQ Reference Table - Byte #2

Char	Const. OFF	Const. ON	Comp. Failure	Corr. Error	Online Data Error	Busy	Active	Online
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
@	0	1	0	0	0	0	0	0
A	0	1	0	0	0	0	0	1
B	0	1	0	0	0	0	1	0
C	0	1	0	0	0	0	1	1
D	0	1	0	0	0	1	0	0
E	0	1	0	0	0	1	0	1
F	0	1	0	0	0	1	1	0
G	0	1	0	0	0	1	1	1
H	0	1	0	0	1	0	0	0
I	0	1	0	0	1	0	0	1
J	0	1	0	0	1	0	1	0
K	0	1	0	0	1	0	1	1
L	0	1	0	0	1	1	0	0
M	0	1	0	0	1	1	0	1
N	0	1	0	0	1	1	1	0
O	0	1	0	0	1	1	1	1
P	0	1	0	1	0	0	0	0
Q	0	1	0	1	0	0	0	1
R	0	1	0	1	0	0	1	0
S	0	1	0	1	0	0	1	1
T	0	1	0	1	0	1	0	0
U	0	1	0	1	0	1	0	1
V	0	1	0	1	0	1	1	0
W	0	1	0	1	0	1	1	1
1	0	1	0	1	1	0	0	0
Y	0	1	0	1	1	0	0	1
Z	0	1	0	1	1	0	1	0
[	0	1	0	1	1	0	1	1
\	0	1	0	1	1	1	0	0
]	0	1	0	1	1	1	0	1
^	0	1	0	1	1	1	1	0
_	0	1	0	1	1	1	1	1
‘	0	1	1	0	0	0	0	0



A "1" indicates the bit is turned on. A "0" indicates the bit is off.

ENQ Reference Table - Byte #2 (continued)

Char	Const. OFF	Const. ON	Comp. Failure	Corr. Error	Online Data Error	Busy	Active	Online
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
a	0	1	1	0	0	0	0	1
b	0	1	0	1	0	0	0	1
c	0	1	1	1	0	0	0	1
d	0	1	0	0	1	0	0	1
e	0	1	1	0	1	0	0	1
f	0	1	0	1	1	0	0	1
g	0	1	1	1	1	0	0	1
h	0	1	0	0	0	1	0	1
i	0	1	1	0	0	1	0	1
j	0	1	0	1	0	1	0	1
k	0	1	1	1	0	1	0	1
l	0	1	0	0	1	1	0	1
m	0	1	1	0	0	1	0	1
n	0	1	0	1	1	1	0	1
o	0	1	1	1	1	1	0	1
p	0	1	0	0	0	0	1	1
q	0	1	1	0	0	0	1	1
r	0	1	0	1	0	0	1	1
s	0	1	1	1	0	0	1	1
t	0	1	0	0	1	0	1	1
u	0	1	1	0	1	0	1	1
v	0	1	0	1	1	0	1	1
w	0	1	1	1	1	0	1	1
1	0	1	0	0	0	1	1	1
y	0	1	1	0	0	1	1	1
z	0	1	0	1	0	1	1	1
{	0	1	1	1	0	1	1	1
|	0	1	0	0	1	1	1	1
}	0	1	1	0	1	1	1	1
~	0	1	0	1	1	1	1	1
Dec 127	0	1	1	1	1	1	1	1



A "1" indicates the bit is turned on. A "0" indicates the bit is off.

ENQ Reference Table - Byte #3

Char	Const. OFF	Const. ON	Low Battery	Format Error	Waiting to Dispense Label	Ribbon Fault	Stock Fault	Comm Error
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
@	0	1	0	0	0	0	0	0
A	0	1	0	0	0	0	0	1
B	0	1	0	0	0	0	1	0
C	0	1	0	0	0	0	1	1
D	0	1	0	0	0	1	0	0
E	0	1	0	0	0	1	0	1
F	0	1	0	0	0	1	1	0
G	0	1	0	0	0	1	1	1
H	0	1	0	0	1	0	0	0
I	0	1	0	0	1	0	0	1
J	0	1	0	0	1	0	1	0
K	0	1	0	0	1	0	1	1
L	0	1	0	0	1	1	0	0
M	0	1	0	1	1	0	0	1
N	0	1	0	0	1	1	1	0
O	0	1	0	0	1	1	1	1
P	0	1	0	1	0	0	0	0
Q	0	1	0	1	0	0	0	1
R	0	1	0	1	0	0	1	0
S	0	1	0	1	0	0	1	1
T	0	1	0	1	0	1	0	0
U	0	1	0	1	0	1	0	1
V	0	1	0	1	0	1	1	0
W	0	1	0	1	0	1	1	1
X	0	1	0	1	1	0	0	0
Y	0	1	0	1	1	0	0	1
Z	0	1	0	1	1	0	1	0
[	0	1	0	1	1	0	1	1
\	0	1	0	1	1	1	0	0
]	0	1	0	1	1	1	0	1
^	0	1	0	1	1	1	1	0
_	0	1	0	1	1	1	1	1
‘	0	1	1	0	0	0	0	0



A "1" indicates the bit is turned on. A "0" indicates the bit is off.

ENQ Reference Table - Byte #3 (continued)

Char	Const. OFF	Const. ON	Low Battery	Format Error	Waiting to Dispense Label	Ribbon Fault	Stock Fault	Comm Error
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
a	0	1	1	0	0	0	0	1
b	0	1	1	0	0	0	1	0
c	0	1	1	0	0	0	1	1
d	0	1	1	0	0	1	0	0
e	0	1	1	0	0	1	0	1
f	0	1	1	0	0	1	1	0
g	0	1	1	0	0	1	1	1
h	0	1	1	0	1	0	0	0
i	0	1	1	0	1	0	0	1
j	0	1	1	0	1	0	1	0
k	0	1	1	0	1	0	1	1
l	0	1	0	1	0	1	1	0
m	0	1	1	1	1	0	0	1
n	0	1	1	0	1	1	1	0
o	0	1	1	0	1	1	1	1
p	0	1	1	1	0	0	0	0
q	0	1	1	1	0	0	0	1
r	0	1	1	1	0	0	1	0
s	0	1	1	1	0	0	1	1
t	0	1	1	1	0	1	0	0
u	0	1	1	1	0	1	0	1
v	0	1	1	1	0	1	1	0
w	0	1	1	1	0	1	1	1
1	0	1	1	1	1	0	0	0
y	0	1	1	1	1	0	0	1
z	0	1	1	1	1	0	1	0
{	0	1	1	1	1	0	1	1
|	0	1	1	1	1	1	0	0
}	0	1	1	1	1	1	0	1
~	0	1	1	1	1	1	1	0
Dec 127	0	1	1	1	1	1	1	1



A "1" indicates the bit is turned on. A "0" indicates the bit is off.

Job Request

A Job Request returns status information about the most recently processed print job. You can send a job request after an ENQ or batch. You can send two levels of Job Requests:

- Numeric Error Codes Only (0, 1, or 2)
- Verbose (3)

Syntax `{J,#}`

Field Type	Valid Options	Description
Identifier	J	Job Status Request
request#	0 1 2 3	Returns ASCII coded strings or numeric error codes Returns error number

Example `{J,3}`



The job response may not be immediate. The printer must first interpret the format and batch data before returning the response.

Job Response

The Job Response varies, depending on the type of request sent to the printer. The following syntax is the response for a Job 0, 1,or 2 request.

Syntax `{J,Status1,Status2,"FMT-1","BCH-2"}`

Status1 These errors stop the print job. Examples include out of stock, supply faults, or data formatting errors. These errors are numbered less than 23 on the "Job Status 0, 1, 2 Response Table," later in this chapter.

Status2	These are errors in the syntax of the MPCL data stream. Printing does not stop, but the information may not print properly. These errors are numbered greater than 23 on the "Job Status 0, 1, 2 Response Table," later in this chapter.
FMT-1/BCH-2	The format or batch number is returned.

Example `{J,8,0,"FMT-1","BCH-2"}`

This response indicates that a portion of the format extends off the tag in format 1, batch 2. Refer to the "Job Status 0, 1, 2 Response Table" later in this chapter for brief explanations of J, 0, 1, 2 requests. In the above example, refer to error 8 for an explanation.

The following syntax is the response for a Job, 3 request.

Syntax `{J,"Status1 A,B","Status2 A,B,C,D,E","FMT-1","BCH-2"}`

"Status1 A,B" Status1 A contains the field number, in the format or batch, where an error was found. If the error is not in the format or batch, a "0" is returned.

Status1 B contains an error number, which represents the actual printer error. The error numbers can be found in Chapter 11, "Errors."

Example `{J,"2,612",}`

In the above example, **2** is the field number where an error was found. **612** is the error number, indicating that data is missing or does not match the format definition for that field.



Error numbers found in Status1, bit 2, always have a value equal to or greater than 500. These are considered very serious errors.

"Status2 A,B,C,D,E" contains the packet type, field type, field number, parameter, and error number.

Status2 A- Packet Type represents the MPCLII packet that the error occurred on. The packet could be Format (**F**), Batch (**B**), Check Digit (**A**), Graphic (**G**), or Font (**W**).

Status2 B- Field Type represents the MPCLII field that the error occurred on. If the packet has no fields, Status2 A will be replicated. If the error occurs before the field is identified a question mark is sent. Since the batch data records are variable, a **D** is sent to indicate data record.

Status2 **C- Field Number**	represents the field number within each packet. The packet header is the first field and each subsequent field is indicted by the field separator.
Status2 **D- Parameter**	represents the parameter within the field that the error occurred. The numbering begins after the field identifier.
Status2 **E- Error Number**	is the error that coincides with the error numbers presented in Chapter 11, "Errors."
"FMT-1/BCH-2"	The format or batch number is returned.



If more than one error occurred then only the most serious error will be acknowledged.

Example `{J,"","F,B,4,6,33","FMT-1","BCH-2"}`

This response indicates that an error occurred on a bar code (**B**) field within a format (**F**) packet. The bar code field is the fourth (**4**) parameter in the packet. The density is the sixth (**6**) parameter in the packet. Error number **33** means the bar code density is invalid.



To clear an error, press the trigger. The printer cannot accept another job request until the error is resolved.

Job Status 0, 1, 2 Response Table

Number	Meaning
0	No error
1	Stacker fault
2	Supply problem
4	Hot printhead
5	Printhead open
6	Insufficient memory
7	Ribbon problem
8	Field ## extends off tag
9	Field ## has a bad font/bar code
10	Field ## contains invalid data
11	Field ## has a graphic missing
12	Invalid communication channel
13	Invalid file type
14	All communication channels are busy
15	Receive overrun error
16	Receive parity error
17	Receive framing error
18	Receive buffer full
19	Label waiting
23	Low battery
51	Invalid command
52	Invalid separator value
53	Graphic not found
54	Format for batch not found
55	Quantity/Multiples out-of-range
56	Name descriptor too long
57	Invalid cut value
58	Invalid number-of-parts value
59	Invalid orientation value

Job Status 0, 1, 2 Response Table (continued)

Number	Meaning
60	Invalid thickness value
61	Invalid text field
62	Invalid bar code field
63	Data string too long
64	Invalid data field
65	Row greater than stock length
66	Row greater than format length
67	Column greater than printhead width
68	Column greater than format width
69	Invalid label length
70	Invalid label width
71	Invalid increment/decrement value
72	Identifier out-of-range
73	No field to create format
74	Stop location out of range
75	Syntax error
76	Yacc stack overflow
80	Can't use offline format for online batch
81	Can't queue graphic batch
82	Can't store online format
83	Can't queue online batch
84	Can't queue online clear command

Chapter 9. Creating Graphics

This chapter explains how to use graphic packets in your formats to create graphic images on your tag and label designs. This chapter includes how to:

- design graphic images.
- create graphic packets.
- include graphic images in your formats.
- use Binary to Hexadecimal and Dot to Run Length charts.

You can use graphic packets to create

- compliance labels
- bitmapped images.

This chapter gives an overview of both approaches. To include a graphic packet within your format, your format **must** contain a Graphic Field. Refer to "Placing the Graphic in a Format," for more information.

Overview of Compliance Labels

You can create compliance labels by using a graphic packet for the fixed fields and a format packet for the variable fields of your compliance label. The fixed fields of a compliance label are composed of text, lines, or boxes, which are repeated on each label. The variable fields are composed of text, bar codes, and order information, which change with each label. Using a graphic packet for the fixed fields saves time, because the printer does not have to image all the lines or boxes each time the compliance label is printed.

Also, using a graphic packet for a compliance label reduces the number of fields in your format. Formats have a maximum number of fields per packet (**0-99**). However, you can bypass that requirement by placing your compliance layout in a graphic packet. When you process your formats, you only need one line to call the graphic packet.

The following example shows how to call a graphic packet from within a format packet.

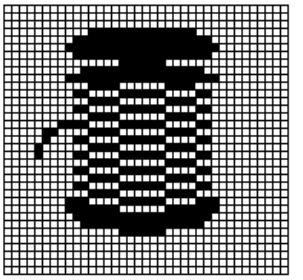
```
{                                   Start of Packet
F,1,A,R,E,400,400,"RDCI" ¦          Format Header
G,57,0,0,0,0 ¦                      Call the graphic packet
.                                   variable information
.                                   variable information
}                                   End of Packet
```

Once you have your compliance label format set up, all you need to do is add the variable sections (bar codes, addresses, and order information) to the format packet.

To see a sample compliance label graphic packet, refer to "Creating a Graphic Packet." To see a sample compliance label using a graphic packet within a format, refer to "Placing the Graphic in a Format."

Overview of Bitmapped Images

A printed image is formed through a series of dots. Each square on the grid represents a dot on the printhead. The graphic image is created by blackening dots in a specific pattern.



You can print varying shades of gray according to the concentration of dots on the image.

When the dots are printed together, the end result is a graphic image.

Determining a Method

You can use one of two methods to map out your graphic image:

Hexadecimal Method

The dot sequences are segmented into Binary numbers, and then converted to Hexadecimal numbers.

A graphic using gray-scaling, several slanted lines, or several vertical lines typically translates more efficiently with Hex Representation.

Run Length Encoding Method

The dot sequences are segmented into black and white strings within a row. The total count of each white string is converted to a lowercase letter, corresponding to numeric value. The total count of each black string is converted to an uppercase letter, corresponding to numeric value. This method is more complicated, but can reduce imaging time for graphics that contain repetitive rows of dots.

A graphic with horizontal lines or very few white-to-black borders typically translates more efficiently with Run Length Encoding.

The most efficient encoding method depends on how complicated your graphic image is and whether or not imaging time is a concern. You may want to experiment with both encoding methods to get optimal performance.

Designing the Graphic Image

This section describes

- how to design compliance labels.
- how to design bitmapped images.
- special considerations.
- how to map out the graphic image by the Hex and Run Length methods.
- how to store the graphic image.

The information presented in this section deals with Binary and Hexadecimal numbers. Conversions charts are provided at the end of this chapter for:

- Binary to Hexadecimal
- Dot to Run Length Encoding

Designing Compliance Labels

To use a graphic packet to design your compliance label:

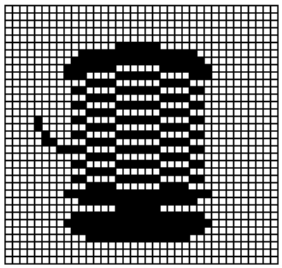
1. Decide which fields are fixed (constant text, lines, boxes) and which fields are variable (addresses and shipping information).
2. Lay out your compliance label as you would any other format. Refer to "Creating a Graphic Packet," for more information.

Designing Bitmapped Images

Once you determine the encoding method to use, you can begin mapping out your graphic image.



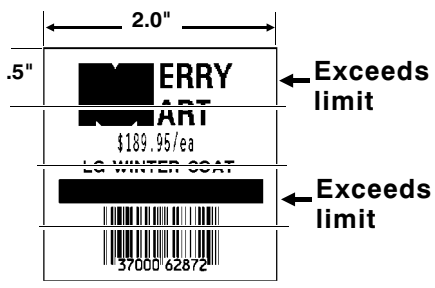
The image that you map must be an upside down mirror image of the final result.

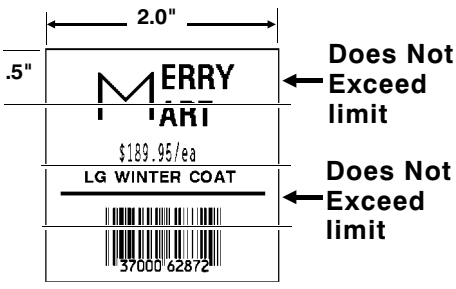


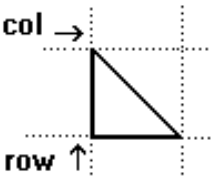
Special Considerations

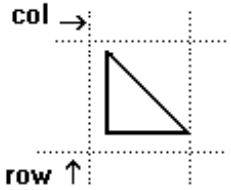
Solid black print cannot exceed 20% of any given square inch of the supply. If your black print exceeds this limit, you may lose data or damage the printer.

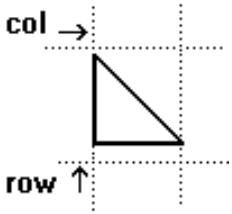
In the first label, the large "M" logo and thick black line exceed the allowed black to white print ratio. In the second label, the large "M" logo does not exceed the black to white print ratio.





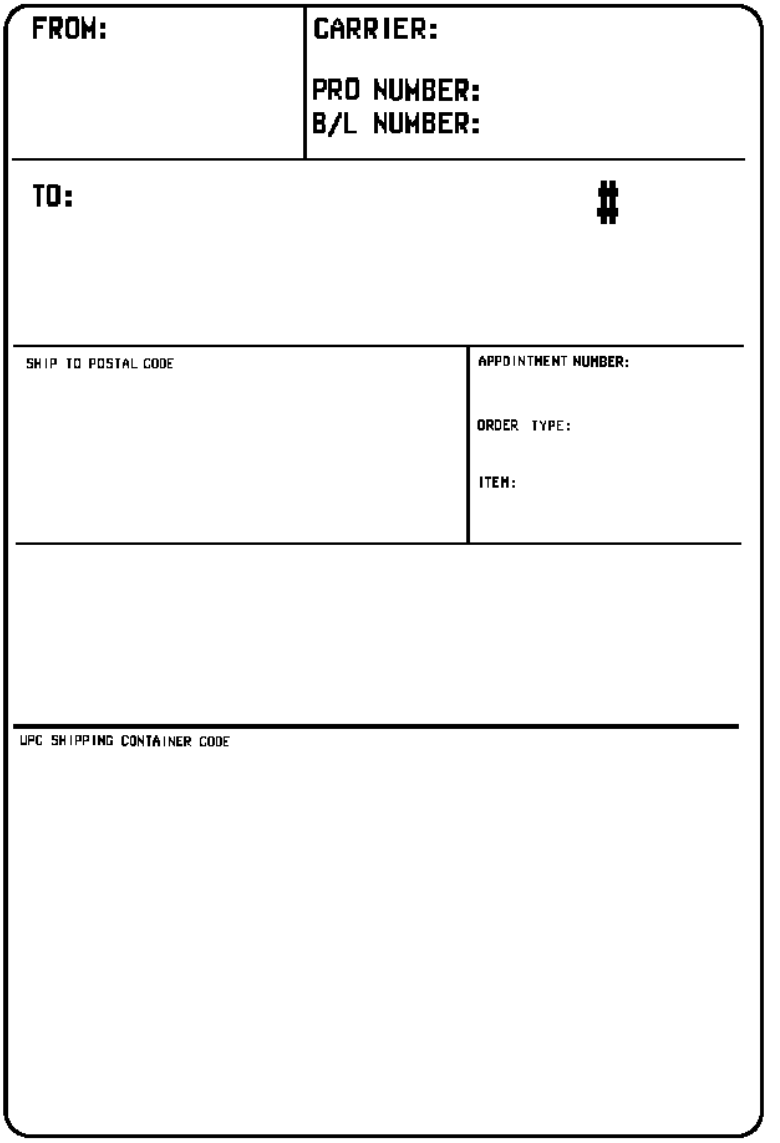

col
row


col
row


col
row


Pat's
Parts
3/8 inch Wire
3.55/8 Pack
45911 87120

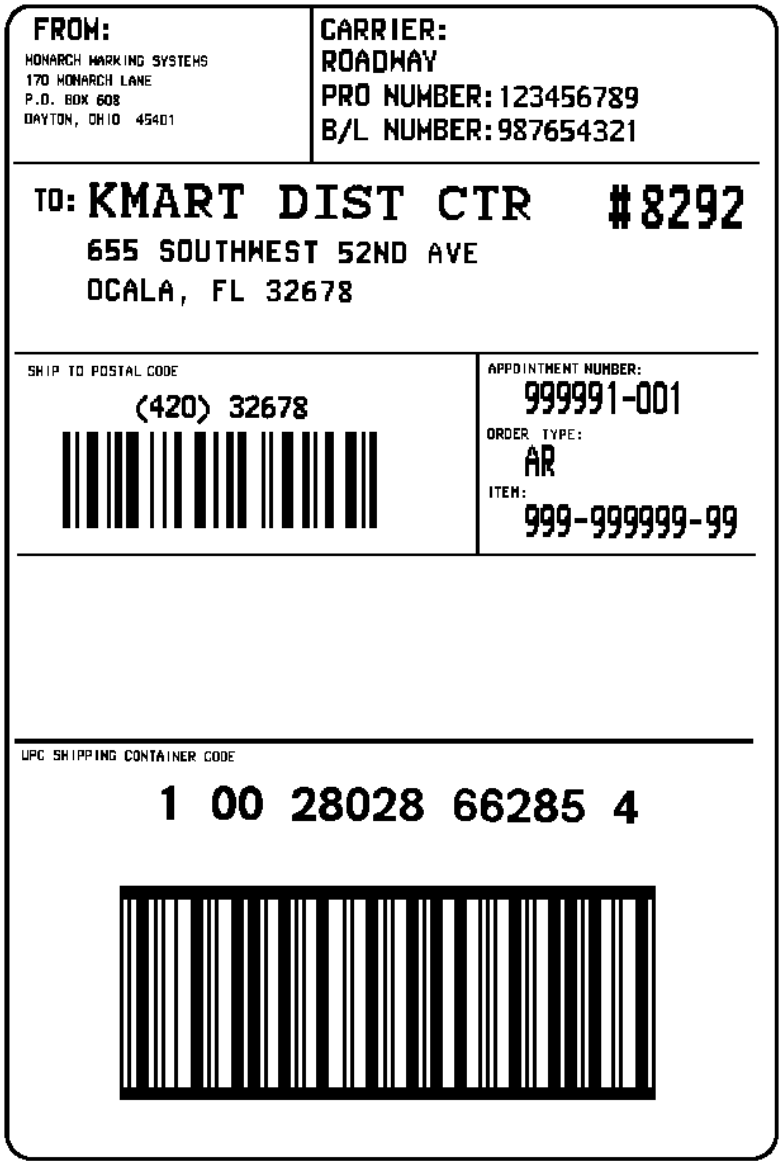
G1 HEADER	G2 GRAPH ID	G3 ACTION	G4 DEVICE	G5 UNITS	G6 ROW	G7 COLUMN	G8 MODE	G9 NAME
G	A							

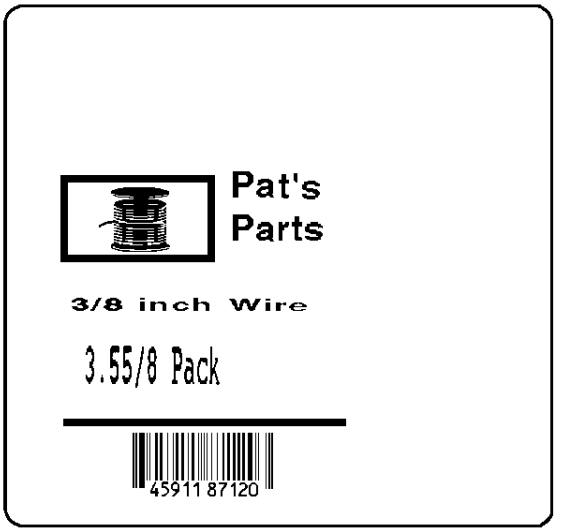

FROM:
CARRIER:
PRO NUMBER:
B/L NUMBER:
TO:
#
SHIP TO POSTAL CODE
APPOINTMENT NUMBER:
ORDER TYPE:
ITEM:
UPC SHIPPING CONTAINER CODE





G1 HEADER	G2 GRAPH ID	G3 ROW	G4 COLUMN	G5 MODE	G6 ROTATION
G				O	O


FROM:
MONARCH MARKING SYSTEMS
170 MONARCH LANE
P.O. BOX 608
DAYTON, OHIO 45401
CARRIER:
ROADWAY
PRO NUMBER: 123456789
B/L NUMBER: 987654321
TO: KMART DIST CTR #8292
655 SOUTHWEST 52ND AVE
OCALA, FL 32678
SHIP TO POSTAL CODE
(420) 32678
APPOINTMENT NUMBER:
999991-001
ORDER TYPE:
AR
ITEM:
999-999999-99
UPC SHIPPING CONTAINER CODE
1 00 28028 66285 4


Pat's
Parts
3/8 inch Wire
3.55/8 Pack
45911 87120

Chapter 10. Diagnostics

This chapter explains how to print a test label, and where to find additional diagnostics information.

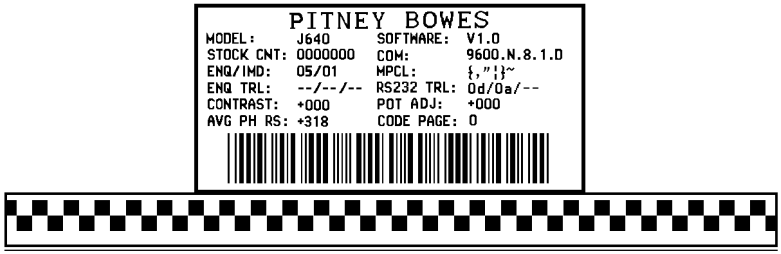
Before you call for service, print a test label. The label contains information to help Service diagnose mechanical and setup problems.

Printing a Test Label

NOTE

Before printing a test label, disconnect your printer from the host.

To print a label, the printer must be in the diagnostics mode. Press and hold down the trigger during power up until the amber light turns on and then off. Release the trigger when the amber light turns off. One four-inch wide sample label will print out, as shown below.



NOTE

You can also use an immediate command to print a test label, refer to Chapter 5, "Configuring the Printer," for more information. After you print a test label, your printer is in "Data Dump" mode. If you do not want to use the data dump feature, press the trigger twice. See "Using Data Dump" for more information.

Chapter 11. Errors

This chapter provides explanations of your printer's errors. The errors are classified by type and are listed in order from 001 to 765.

If you have any questions regarding your printer, contact our National Diagnostic Center at 1-800-537-2488.

If you have trouble loading supplies or performing maintenance, refer to your *J640/J641 Operator's Handbook*.



To clear an error, press the trigger.

Data Errors

Errors 001 to 249 are Data Errors. These errors are returned in response to a **J,3** request. Refer to Chapter 8, "Status Polling," for more information. A Data Error indicates that incorrect data was received from the host, causing the printer to ignore the entire print job. After checking the data stream and correcting the problem, transmit the print job again.

The following is a list of data errors. Some of these errors display different elements (batch, format, graphic, etc.), depending on the type of data processed.

Format Errors

Error Code	Description
001	Format/ Batch ID number is invalid. Valid numbers are **1** to **999**.
002	Name is invalid. Valid name is **1** to **8** characters inside quotes or a printer-assigned name ("").
003	Action is invalid. Must be **A** or **C**.
004	Supply length is invalid. Refer to "Defining the Format Header" in Chapter 7 for valid lengths.
005	Supply width is invalid. Refer to "Defining the Format Header" in Chapter 7 for valid widths.
006	Storage device is defined as something other than **R**.
007	Unit of measure is invalid. Must be **E**, **M**, or **G**. Refer to "Defining the Format Header" in Chapter 7 for information about valid measurements.

Field Errors

Error Code	Description
010	Field ID number is outside the range **0** to **999**.
011	Field length exceeds **2710**.
012	Row field position is greater than the maximum stock dimension. Refer to "Defining Text Fields" in Chapter 7 for valid row lengths.
013	Column field position is greater than the maximum stock dimension. Refer to "Defining Text Fields" in Chapter 7 for valid column widths.
014	Font style is defined as something other than: **1**, **2**, **3**, **4**, **10**, **11**, **50**, or a valid soft font selector. Refer to "Defining Text Fields" in Chapter 7 or Appendix B, "Fonts," for more information about font styles.
015	Character rotation is defined as something other than **0**, **1**, **2**, or **3**. Refer to "Defining Text Fields" in Chapter 7 for information about character rotation.
016	Field rotation is defined as something other than **0**, **1**, **2**, or **3**. Refer to "Defining Text Fields" in Chapter 7 for information about field rotation.
017	Field restriction is defined as something other than **V** or **F**.
018	Code page selection defined in the field is invalid. Valid options are: **0** Internal **1** ANSI **437** DOS 437 (Domestic) **850** DOS 850 (Multilingual)
020	Vertical magnification is outside the range **1** to **7**.

Error Code	Description
021	Horizontal magnification is outside the range **1** to **7**.
022	Color is defined as something other than **B**, **D**, **O**, **R**, or **W**. Refer to "Defining Text Fields" in Chapter 7 for more information about the valid color choices.
023	Intercharacter gap is outside the range **0** to **99**.
024	Field justification is defined as something other than **B**, **C**, **E**, **L**, or **R**. Refer to "Defining Text Fields" in Chapter 7 for more information about field justification.
025	String length is outside the range **0** to **2710**.
030	Bar code height is defined as less than the minimum: English **20** Metric **51** Dots **38** or is not within the length and width dimensions of the supply.
031	Human readable option is invalid. Valid Options: **0** not UPCA or EAN **1** no CD or NS **5** NS at bottom, no CD **6** CD at bottom, no NS **7** CD and NS at bottom **8** no text Refer to the bar code density chart in Chapter 1, "Designing a Format," for more information.
032	Bar code type is invalid. Refer to Chapter 1, "Designing a Format" for valid options.
033	Bar code density is invalid. See the bar code density charts in Chapter 1, "Designing a Format."

Error Code	Description
040	Line thickness is outside the range **0** to **99**.
041	Line orientation is invalid. Line box is defined as something other than **0**, **90**, **180**, or **270**.
042	End row is invalid. Line segment or box end row is defined outside of printable area.
043	End column is invalid. Line segment or box end column is defined outside of printable area.
044	Dot pattern for line or box is outside the range **0** to **8**.
045	Line length is defined beyond the maximum length. Refer to "Defining Line Fields" in Chapter 7 for valid lengths.
046	Line type is defined as something other than **S** or **V**. Refer to "Defining Line Fields" in Chapter 7 for valid line types.
051	Imaging value is defined as something other than **0**.

Batch Errors

101	No format corresponding to format number in batch header.
102	Print quantity is outside the range **1** to **32000**.
104	Image control code is defined as something other than **N** or **U**. Refer to Chapter 4, "Recording Batch Data" for more information about image control codes.
105	Batch separator is invalid. The valid options are **0** (Off) or **1** (On).
106	Print multiple is outside the range **1** to **999**.

Error Code	Description
107	Cut multiple is outside the range **1** to **999**. Only valid for printer with a knife.
108	Multiple part supply is outside the range **1** to **5**.
109	Reserved for knife usage. Valid only on printers with a knife.

Option Errors

200	Option number is invalid. Number is something other than **1, 2, 3, 4, 5, 20, 30, 31, 40, 41, 42, 43, 50, 51, 52, 60** or **61**.
201	Copy length is outside the range **0** to **2710**.
202	Copy start position is outside the range **0** to **2709**.
203	Destination start position is outside the range **0** to **2709**.
204	Source field is outside the the range **0** to **99**.
205	Copy type is invalid. Valid options are: **1** Copy after rules **2** Copy before rules
206	Increment/Decrement selection is invalid. Valid options are **I** (increment) or **D** (decrement).
207	Incrementing start position is outside the range **1** to **2710**.
208	Incrementing end position is outside the range **1** to **2710**.
209	The incrementing amount is outside the range **0** to **999**.

Error Code	Description
210	Security value for a PDF417 bar code is outside the range **0** to **8**. Correct the value and resend the format to the printer.
211	Narrow element value is less than **2** or greater than **99**. Correct the value and resend the format to the printer.
212	Wide element value is less than **2** or greater than **99**. Correct the value and resend the format to the printer.
213	Dimension is not within the correct range for the row/column value: **1** to **30** for a column **3** to **90** for a row
214	Trunctation code is invalid. Valid options: **S** Standard bar code **T** Truncated bar code
215	Aspect code is invalid. Valid options: **C** Columns **R** Rows
216	Rule definition code is invalid. Valid codes: **S** Set **T** Template

Error Code	Description
217	Input device is invalid. Valid options: **D** Default **H** Host **K** Keyboard **N** None **S** Scanner
218	Pad direction is invalid. Valid options: **L** From Left **R** From Right
219	Pad character is outside the range **0** to **255**.
220	Check digit selection is invalid. Must contain **G** to generate check digit.
221	Primary or secondary price format is outside the range **1** to **6**.
222	Data type restriction is outside the range of **1** to **6**.
223	Rule is not valid for the field.
224	Bar Code Inter Character Gap is invalid. Valid ranges are **1-99** in printer dots.

Online Configuration Errors

Errors 251 to 299 are Online Configuration Errors. These errors correspond to the values in Records **A**-**F**. If these values are not set correctly, the host cannot communicate with your printer. Check your configuration setup and transmit the print job again.

251	Online/offline power-up mode is invalid. Must be **0** or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.

Error Code	Description
252	Language selection is invalid. **0** is the only valid option. Refer to Chapter 5, "Configuring the Printer," for more information.
253	Batch separator code is invalid. Must be **0** or **1**.
254	Slash zero selection is invalid. Must be **0** or **1**.
255	Supply type is invalid. Must be **0** or **2**. Refer to Chapter 5, "Configuring the Printer," for more information.
256	Ribbon selection is invalid. Must be **0** or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.
257	Feed mode is invalid. Must be **0** or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.
258	Supply position is outside the range. Refer to Chapter 5, "Configuring the Printer," for more information.
259	Contrast adjustment is outside the range **-390** to **156**.
260	Print adjustment is outside the range **-99** to **99**.
261	Margin adjustment is outside the range **-99** to **99**.
262	Speed adjustment is invalid. Refer to Chapter 5, "Configuring the Printer," for more information.
263	Primary monetary symbol is invalid. Refer Chapter 5, "Configuring the Printer," for more information.
264	Secondary symbol selection is invalid. Must be **0** or **1**.

Error Code	Description
265	Monetary decimal places are outside the range **0** to **3**.
266	Character string length is invalid. Must be **5** or **7**.
267	Baud rate selection is invalid. Must be **0**, **1**, **2**, **3**, or **4**. Refer to Chapter 5, "Configuring the Printer," for more information.
268	Word length selection is invalid. Must be **0**, or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.
269	Stop bits selection is invalid. Must be **0**, or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.
270	Parity selection is invalid. Must be **0**, or **1**. Refer to Chapter 5, "Configuring the Printer," for more information.
271	Flow control selection is invalid. Must be **0**, **1**, **2** or **3**. Refer to Chapter 5, "Configuring the Printer," for more information.
272	Internal code page selection is invalid. Valid options: **0** Internal **1** ANSI **2** DOS (Domestic) **3** DOS (Multilingual)
273	Cut adjustment is outside the range **-99** to **99**.
282	RS232 Trailer string is too long. Use a maximum of **3** characters.
283	ENQ Trailer string is too long. Use a maximum of **3** characters.

Error Code	Description
284	Call Pitney Bowes Service.
285	Call Pitney Bowes Service.
286	The buffer size is invalid. Call Pitney Bowes Service.
287	The supply width is invalid. Options: **0** to **99**

Packet Errors

Errors 310 to 399 are packet errors. These error occur in your check digit, graphic, or font packet. Check the information in these packets and transmit the print job again.

310	Check digit scheme number is invalid. Valid numbers are **1** to **10** only.
311	Modulus is invalid. Valid numbers are **2** to **11** only.
314	Check digit algorithm is defined as something other than **D** or **P**.
325	Duplicating direction is invalid. Must be **0** or **1**.
327	Amount of row adjustment is outside the range **0** to **999**.
328	Duplicate count is invalid. Valid count is **0** to **999**.
340	Bitmap line encoding is defined as something other than **H** or **R**.
350	Font number is outside the range **1** to **16**.
351	Font data length is outside the range **68** to **16384**.
352	Insufficient font memory is available for the downloaded font.
380	Job request is outside the range **0** to **3**.

Parser Errors

Errors 400 to 408 are parser errors. These errors occur when the packet cannot be parsed. Check the syntax of your packet and transmit the print job again.

Error Code	Description
400	The character immediately following **{** is invalid.
401	Internal software failure. Call Pitney Bowes Service.
402	Field separator is not in the expected location.
403	Field separator was not found.
405	Too many fields exist in the format. You cannot have more than **100** fields in the format.
429	A field number appears more than once in a format.
430	The format uses a graphic file that cannot be found.
431	Internal software failure. The format name the task checked in does not match the name the task added.
432	Internal software failure. The graphic name the task checked in does not match the name the task added.
433	The batch references a field number that does not exist in the format.

Communication/ Hardware Failures

Errors 409 to 415 are usually caused by a hardware failure, by an incorrect SETUP option or by the host ignoring flow control (XON/OFF, CTS/RTS or DTR).



The valid options for printer Port Settings are shown below. The default values are shown in bold.

Baud rate	1200, 2400, 4800, **9600**, 19200
Word length	7 or **8**
Stop bits	**1** or 2
Parity	Odd, Even, **None**
Flow control	None, Xon/Xoff, **DTR**, CTS/RTS
Reset	Yes or No

Error Code	Description/Action
409	The printer memory is full. Delete unnecessary formats or graphics from memory. If you are using a graphic file that is very large, consider using another mapping method (such as run length encoding) to reduce the required memory.
410	Parity on the printer does not match the parity on the host. Check the parity setting under SETUP options.
411	Framing error. The printer cannot communicate with the host. Make sure the host is turned on, communication cables are connected correctly, Port Settings are correct, and communications are active. Do not toggle between MS-Windows and MS-DOS, while using the COPY command, or you will receive a framing error. (Exit MS-Windows **before** using the COPY command.) Re-transmit the data.

Error Code	Description
412	There is a problem with flow control between the printer and the host. Make sure the printer and the host parity settings match (both are DTR or both are Xon/Xoff). If the error persists, call Pitney Bowes Service.
413	Online receive queue is full. Check your printer's XON/XOFF or DTR SETUP values to be sure there is not a flow control problem.

Buffer Errors

414	Internal keyboard buffer is full. Call Pitney Bowes Service.
415	User defined memory failure. Call Pitney Bowes Service.

Internal Errors

Errors 420 to 499 are internal errors. These errors occur because of a software problem. Call Pitney Bowes Service.

Error Code	Description
420	Internal software error relating to uploading. Call Pitney Bowes Service.
421	Internal software error relating to location name. Call Pitney Bowes Service.
422	Internal software error relating to duplicate name. Call Pitney Bowes Service.
423	Internal software error. Call Pitney Bowes Service.

Error Code	Description
424	Item in use. Record the error, then press the trigger and try to continue. If the error reappears, call Pitney Bowes Service.
425	Item already checked out. Record the error, then press the trigger and try to continue. If the error reappears, call Pitney Bowes Service.
426	Item not checked out. Record the error, then press the trigger and try to continue. If the error reappears, call Pitney Bowes Service.
427	Format name is invalid. Valid name is **1 - 8** characters inside quotes or "" for a printer-assigned name. Record the error, then press the trigger and try to continue. If the error reappears, call Pitney Bowes Service.
428	Batch name is invalid or graphic not found. Record the error, then press the trigger and try to continue. If the error reappears, call Pitney Bowes Service.
434	A downloaded task is not executable. Call Pitney Bowes Service.
435	A downloaded task already exists. Call Pitney Bowes Service.

Data Formatting Failures

Errors 570 to 599 are data formatting errors. These errors indicate that a field will print incorrectly. After you have checked the data stream and corrected the data, retransmit the batch.



For errors 571-614, the batch will still print, but the field, font, bar code, or density may be incomplete, missing or contain incorrect data.

Error Code	Description
571	UPC or EAN bar code data length is invalid. The bar code data length in the batch does not fit the format.
572	A copy field, padded field, or incrementing field length is invalid. The field length in the batch does not fit the format or the field contains blanks. Or, the fixed length field does not contain the specified number of characters.
573	Price field length is invalid. The price field length in the batch does not fit the format or the field contains blanks.
574	No CD scheme or room for CD. The CD scheme in the batch does not fit the format or the field contains blanks.
575	The graphic included in your format could not be found.

Imaging Errors

Errors 600 to 699 are imaging errors. These errors occur when the printer cannot image the tag or label. Check your format and transmit the print job again.

Error Code	Description
600	An imaging error occurred because the batch was refused. Call Pitney Bowes Service.
601	An error occurred while the batch was imaging. Call Pitney Bowes Service.
602	The batch was not found during imaging. Call Pitney Bowes Service.
611	Font, bar code or density is invalid. The font, bar code or density in the batch does not fit the format.
612	The data in this line of the batch is either missing or does not match the format.
613	Reference point off tag.
614	Portion of field off tag. There may be an invalid character in the packet. Make sure you did not enter **O** for **0**.
615	Bar code width is greater than 16 inches or the number of keywords for your PDF 417 bar code exceeds **928**. Decrease the density or shorten the amount of data to print the bar code.
616	Dot shifting failed. Call Pitney Bowes Service.
618	Magnification is out of range. Valid ranges are from **1-7**.

Machine Faults

Errors 700 to 765 occur when there is a problem with the printer. Call Pitney Bowes Service.

Error Code	Description
700	An error is pending and the printer cannot continue with the batch. Press the trigger and try to continue printing. If the error continues to appear, call Pitney Bowes Service.
701	Printer received a command that it cannot execute while it is running. Press the trigger and try to continue printing. If the error reappears, call Pitney Bowes Service.
702	SETUP setting is invalid. Check your printer's SETUP settings. Press the trigger and try to continue printing. If the error reappears, call Pitney Bowes Service.
704	Printer has not sensed a supply mark within the specified number of inches. Check the ✦ supply tracking ✦ supply marks ✦ black mark sensor position ✦ supply roll for binding. Press the trigger. If the error continues to appear, change the supply.
705	Invalid batch received. Press the trigger. If the error continues to appear, call Pitney Bowes Service.

Error Code	Description
750	Printhead is overheated. Turn the printer off to let the printhead cool. If the error persists, call Pitney Bowes Service.
751	Printer did not sense a black mark when expected.



For errors 751-753, Check the

- supply tracking
- supply marks
- black mark sensor position
- supply roll for binding.

Press the trigger and try to continue printing. If the error continues to appear, change the supply.

752	Printer sensed a mark in the wrong place.
753	Printer sensed a mark that is too long.
754	Printer has a ribbon problem. Check the ribbon. The printer is either out of ribbon or the ribbon is jammed.
755	Printhead is open. Close the printhead before continuing. If the error persists, call Pitney Bowes Service.
756	The printer is out of supplies. Load supplies.
757	Load Supplies. The calibrated supply length differs by plus or minus .25 inches from the format.

Error Code	Description
758	Check Supply. Either the on-demand sensor is broken, the supply is not seen, or you have a continuous unit set to on-demand mode. Adjust the on-demand sensor so it is over a white area on the supply, or set the unit to continuous mode. This message may also appear on printer models that do not have the rewind capability.
759	Knife is not moving. Valid only on printers with a knife.
760	Knife jam. Valid only on printers with a knife.
761	Stacker is full. Valid only on printers with a stacker.
762	Low battery. Recharge your battery. If the error persists, call Pitney Bowes Service.
763	Waiting to dispense label. Press the trigger. If the error persists, call Pitney Bowes Service.
764	Verifier failed. Valid only on printers with a verifier.
765	Printhead Failure. Call Pitney Bowes Service.

Appendix A. Samples

This appendix contains sample formats and labels. You can customize any of these formats and labels to meet your needs.

Sample UPCA Format Packet

```
{
F,25,A,R,E,400,400,"Fmt 25" ¦
C,185,80,0,1,2,1,W,C,0,0,"PITNEY BOWES" ¦
B,1,12,F,115,80,1,2,50,5,L,0 ¦
T,2,25,V,80,80,1,1,1,1,B,L,0,0 ¦
}
```

Sample Batch Packet

```
{
B,25,N,1 ¦
1,"12345678901" ¦
2,"ANYTOWN, USA" ¦
}
```

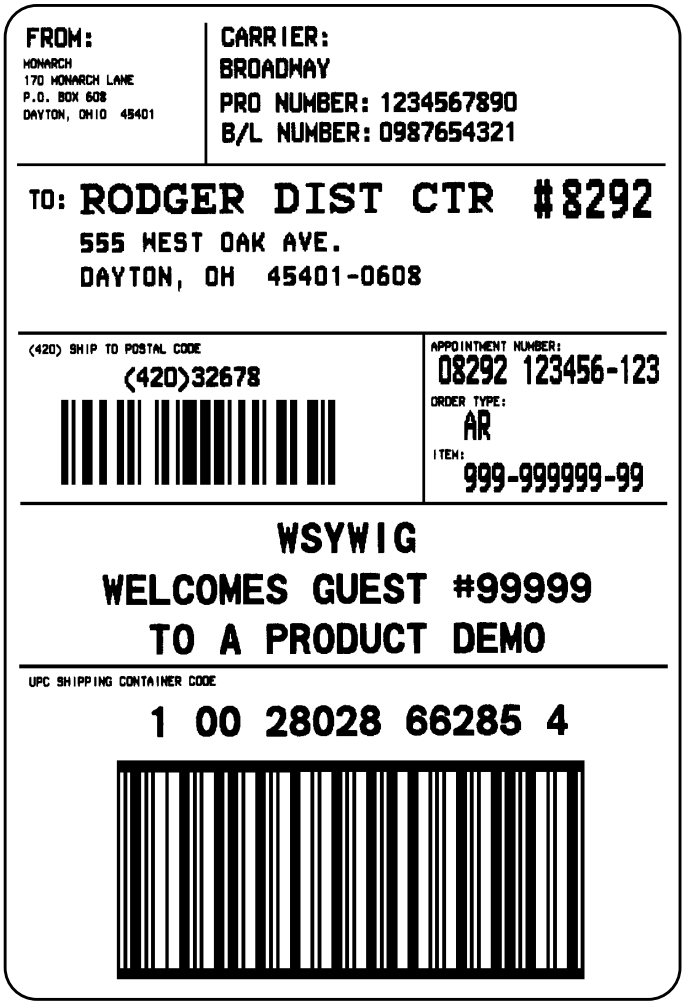


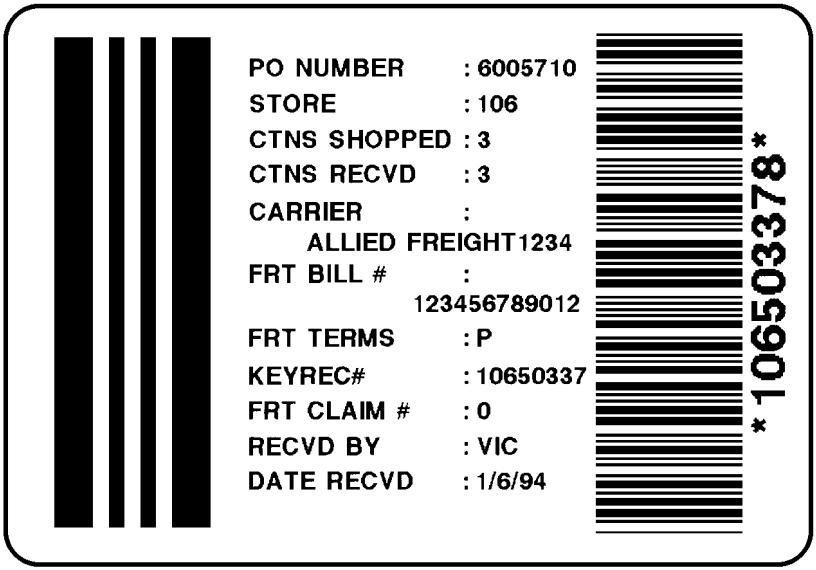
M9446 PRINT SAMPLE



453241739001840
MAXICODE

Samples


FROM:
MONARCH
170 MONARCH LANE
P.O. BOX 608
DAYTON, OHIO 45401
CARRIER:
BROADWAY
PRO NUMBER: 1234567890
B/L NUMBER: 0987654321
TO: RODGER DIST CTR #8292
555 WEST OAK AVE.
DAYTON, OH 45401-0608
(420) SHIP TO POSTAL CODE
(420)32678
APPOINTMENT NUMBER:
08292 123456-123
ORDER TYPE:
AR
ITEM:
999-999999-99
WSYWIG
WELCOMES GUEST #99999
TO A PRODUCT DEMO
UPC SHIPPING CONTAINER CODE
1 00 28028 66285 4


PO NUMBER : 6005710
STORE : 106
CTNS SHOPPED : 3
CTNS RECVD : 3
CARRIER :
ALLIED FREIGHT1234
FRT BILL # :
123456789012
FRT TERMS : P
KEYREC# : 10650337
FRT CLAIM # : 0
RECVD BY : VIC
DATE RECVD : 1/6/94
10650337


2754185285
7 41852 45768 9
65% DACRON POLYESTER
35% COTTON
Made in USA

Appendix B. Fonts

This appendix contains information you need to work with fonts.

Standard Fonts

Your printer comes with these fonts loaded in ROM:

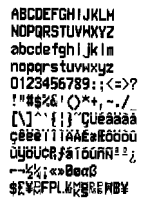
Number	Appearance	Type of Spacing
1	Standard	Monospaced
2	Reduced	Monospaced
3	Bold	Monospaced
4	OCRA-like	Monospaced
10	CG Triumvirate Bold	Proportional
11	CG Triumvirate	Proportional

Refer to the following pages for illustration of these fonts.

Standard Font



Reduced Font



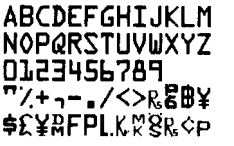


Bold Font



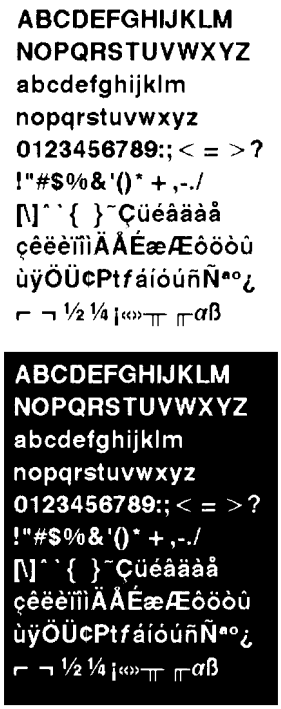


OCRA-like Font

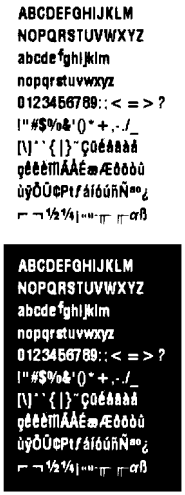




CG Triumvirate Bold Font



CG Triumvirate Font



Appendix C. Symbol Sets/Code Pages

This appendix contains a listing of the symbol sets and code pages the printer supports. The extended characters available within these symbol sets and code pages are also listed.

Supported Symbol Sets and Code Pages

The printer supports these symbol sets and code pages:

- Internal Symbol Set
- ANSI Symbol Set
- DOS Code Page 437
- DOS Code Page 850

Selecting a Symbol Set or Code Page

The printer defaults to the Internal symbol set. You can change the symbol set by changing the symbol set parameter in Record **A**. Refer to Chapter 5, "Configuring the Printer," for more information.

Selecting the Internal Symbol Set

Use this symbol set when you want to:

- use the international monetary symbols
- create formats that may be used on other MPCLII-based printers
- use monospaced fonts: Standard, Reduced, Bold, or OCRA-like.

Selecting the ANSI Symbol Set

Use this symbol set when you want to use proportionally spaced fonts.

Selecting the 437 or 850 Code Page

These code pages provide extended and international characters and use proportionally spaced fonts.

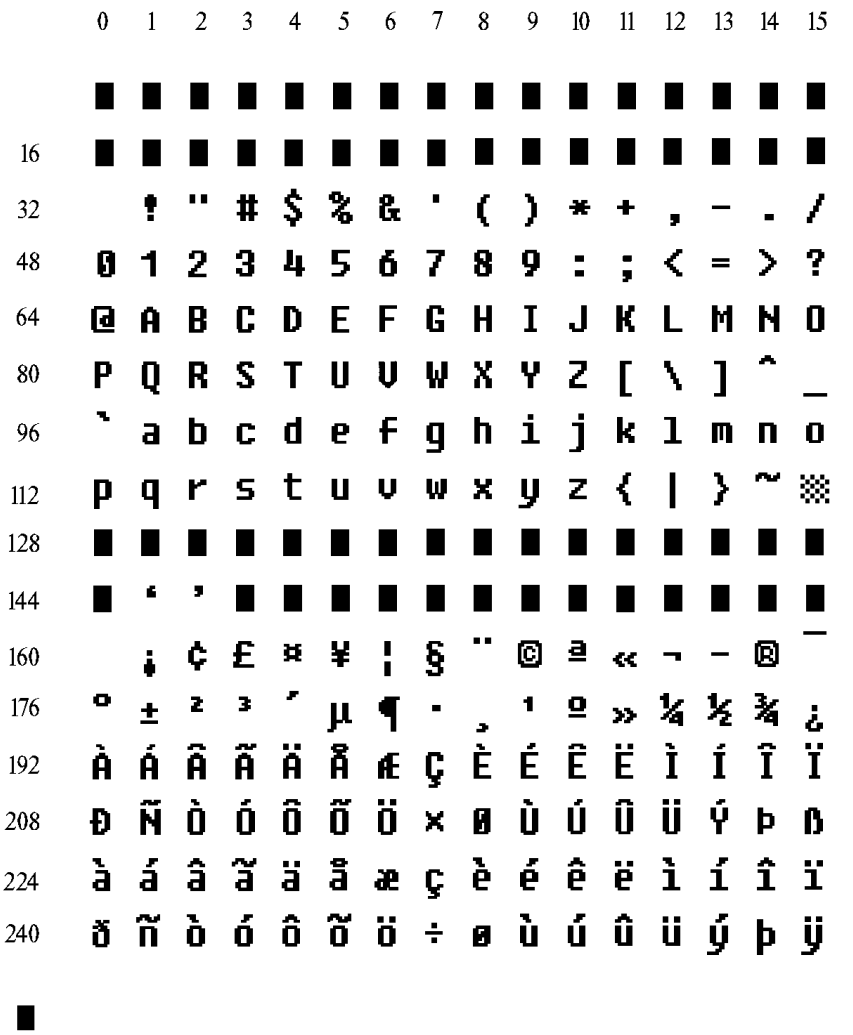
Entering Extended Characters

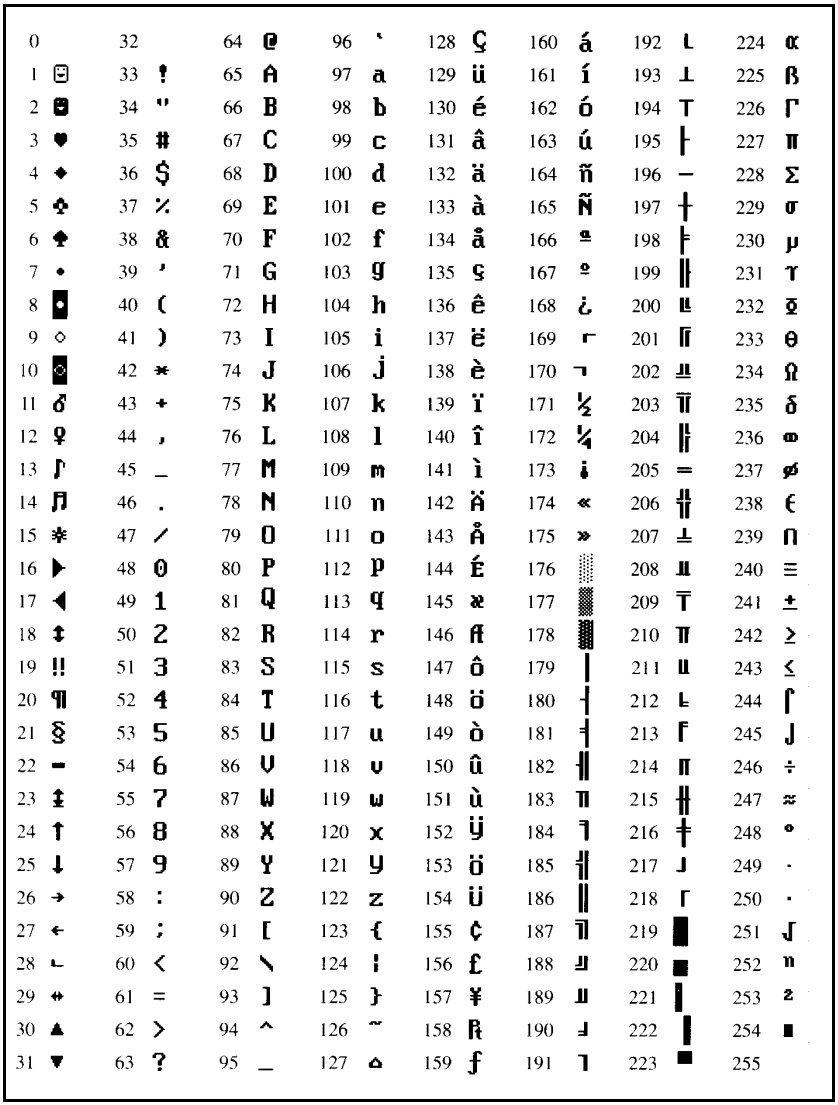
When using extended characters in your batch data file, type a tilde in front of the three-digit code. For example, if you want to include the character Ä in a text field using the Internal Symbol Set, type:

```
1,"~142" ¦
```

Internal Symbol Set

Code	Char.	Code	Char.	Code	Char.
128	Ç	151	û	174	«
129	ü	152	ÿ	175	»
130	é	153	Ö	176	■
131	â	154	Ü	177	$
132	ä	155	¢	178	£
133	à	156	£	179	¥
134	å	157	¥	180	₧
135	ç	158	₨	181	F
136	ê	159	*f*	182	P
137	ë	160	á	183	L.
138	è	161	í	184	Kr
139	ï	162	ó	185	₭
140	î	163	ú	186	₪
141	ì	164	ñ	187	Rs
142	Ä	165	Ñ	188	₱
143	Å	166	ª	189	₩
144	É	167	º	190	₿
145	æ	168	¿	191	¥
146	Æ	169	⌐	199	_
147	ô	170	¬	210	₫
148	ö	171	½	214	ø
149	ò	172	¼	224	α
150	û	173	¡	225	β
				255	™





0		32		64	@	96	`	128	Ç	160	á	192	└	224	Ó
1	☺	33	!	65	A	97	a	129	ü	161	í	193	┴	225	ß
2	☻	34	"	66	B	98	b	130	é	162	ó	194	┬	226	Ô
3	♥	35	#	67	C	99	c	131	â	163	ú	195	├	227	Ò
4	♦	36	$	68	D	100	d	132	ä	164	ñ	196	─	228	õ
5	♣	37	%	69	E	101	e	133	à	165	Ñ	197	┼	229	Õ
6	♠	38	&	70	F	102	f	134	å	166	ª	198	ã	230	µ
7	•	39	'	71	G	103	g	135	ç	167	º	199	Ã	231	Þ
8	◘	40	(	72	H	104	h	136	ê	168	¿	200	╚	232	þ
9	○	41	)	73	I	105	i	137	ë	169	®	201	╔	233	Ú
10	◙	42	*	74	J	106	j	138	è	170	¬	202	╩	234	Û
11	♂	43	+	75	K	107	k	139	ï	171	½	203	╦	235	Ù
12	♀	44	,	76	L	108	l	140	î	172	¼	204	╠	236	ý
13	♪	45	_	77	M	109	m	141	ì	173	¡	205	═	237	Ý
14	♫	46	.	78	N	110	n	142	Ä	174	«	206	╬	238	¯
15	☼	47	/	79	O	111	o	143	Å	175	»	207	¤	239	´
16	►	48	0	80	P	112	p	144	É	176	░	208	δ	240	-
17	◄	49	1	81	Q	113	q	145	æ	177	▒	209	Ð	241	±
18	↕	50	2	82	R	114	r	146	Æ	178	▓	210	Ê	242	=
19	‼	51	3	83	S	115	s	147	ô	179	│	211	Ë	243	¾
20	¶	52	4	84	T	116	t	148	ö	180	┤	212	È	244	¶
21	§	53	5	85	U	117	u	149	ò	181	Á	213	ı	245	§
22	▬	54	6	86	V	118	v	150	û	182	Â	214	Í	246	÷
23	↨	55	7	87	W	119	w	151	ù	183	À	215	Î	247	¸
24	↑	56	8	88	X	120	x	152	ÿ	184	©	216	Ï	248	°
25	↓	57	9	89	Y	121	y	153	Ö	185	╣	217	┘	249	¨
26	→	58	:	90	Z	122	z	154	Ü	186	║	218	┌	250	·
27	←	59	;	91	[	123	{	155	ø	187	╗	219	█	251	¹
28	∟	60	<	92	\	124	¦	156	£	188	╝	220	▄	252	³
29	↔	61	=	93	]	125	}	157	Ø	189	¢	221	¦	253	²
30	▲	62	>	94	^	126	~	158	×	190	¥	222	Ì	254	■
31	▼	63	?	95	_	127	⌂	159	ƒ	191	┐	223	▀	255	

Appendix D. Daily Procedures

This chapter provides some suggestions for creating procedures for your operators.

Daily Startup Checklist

You may want to design a checklist for operators to follow each day. Here are a few suggested checklist items:

____ Turn the host on.

____ Turn the printer on.

____ Make sure ribbon and supplies are loaded.

____ Download packets from the host to the printer.

Print Logs

You may want to keep records of supplies that have been printed. A good way to do this is to design a print log for operators to complete at the end of the day.

Here are some suggestions for types of information to include in a print log:

Date
Operator's Name
Format Name
Supply Size
Quantity Printed
Evaluation of Print Quality
Problems/Comments

Creating DOS Batch Files for Downloading

If you are downloading from an MS-DOS system, you can create batch files to set communication values and download formats. It is a good idea to create a subdirectory to hold your format files.

Here is a DOS batch file that sets a serial port, changes to a subdirectory, and downloads a check digit file, format file, and batch data file.

```
MODE COM1: 2400,N,8,I,P
CD\PITNEY BOWES\COPY LABEL1.CDS COM1
COPY LABEL1.FMT COM1
COPY LABEL1.BCH COM1
```

Refer to your DOS manual for more information on creating batch files.

Backing Up

Keep backup copies of your format, batch data, check digit, and graphic packets.

Contact your Sales or Customer Support representative for further suggestions.

Appendix E. Format Design Tools

Use copies of these worksheets and grids to create formats, batch data, and check digit schemes. You may want to keep copies of the completed forms for your records:

- Online Configuration Worksheet
- Batch Worksheet
- Check Digit Worksheet
- Supply Layout Grids (Inches, Metric, Dots)
- Format Worksheet
- Format Sample Worksheet

ONLINE HEADER

–	HEADER

SYSTEM SETUP

A	HEADER
	ONLINE MODE
	LANGUAGE
	SEPARATOR
	SLASH ZERO
	SYMBOL SET

SUPPLY SETUP

B	HEADER
	SUPPLY TYPE
	RIBBON ON
	FEED MODE
	SUPPLY POSN

PRINT CONTROL

C	HEADER
	CONTRAST
	PRINT ADJUST
	MARGIN ADJUST
	SPEED ADJUST
	WIDTH ADJUST

MONETARY FORMATTING

D	HEADER
	DOLLAR
	SECONDARY
	DECIMALS

CONTROL CHARACTERS

E	HEADER
	START OF HEADER
	PARAMETER SEPARATOR
	CHAR. STRING
	FIELD SEPARATOR
	END OF TRANSMISSION
	DATA ESCAPE
	IMMED. COMMAND
	STATUS REQUEST
	JOB REQUEST

COMMUNICATION SETUP

T	HEADER
	BAUD
	WORD LENGTH
	STOP BITS
	PARITY
	FLOW CONTROL

Batch Worksheet

BATCH HEADER

	B1 HEADER	B2 FORMAT #	B3 NEW / UPDATE	B4 QUANTITY
B				

BATCH CONTROL

	E1 HEADER	E2 FEED-MODE	E3 BATCH-SEP	E4 PRINT-MULT	E5 MULTI-PART	E6 CUT-TYPE	E7 CUT-MULT
E						**0**	**0**

BATCH DATA

FIELD #	DATA
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

BATCH CONTINUATION

C	DATA
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	
C	

Check Digit Worksheet

A1 HEADER	A2 SELECTOR #	A3 ACTION	A4 DEVICE	A5 MODULUS	A6 LENGTH	A7 ALGORITHM	WEIGHTS A8
A			**R**				

A1 HEADER	A2 SELECTOR #	A3 ACTION	A4 DEVICE	A5 MODULUS	A6 LENGTH	A7 ALGORITHM	WEIGHTS A8
A			**R**				

A1 HEADER	A2 SELECTOR #	A3 ACTION	A4 DEVICE	A5 MODULUS	A6 LENGTH	A7 ALGORITHM	WEIGHTS A8
A			**R**				

A1 HEADER	A2 SELECTOR #	A3 ACTION	A4 DEVICE	A5 MODULUS	A6 LENGTH	A7 ALGORITHM	WEIGHTS A8
A			**R**				

Non-Print Zone

The following table lists the non-print zone for your printer.

Top	Bottom	Left	Right
.04 inches 10.2 mm 7.68 dots	.06 inches 15.2 mm 11.5 dots	.05 - .11 inches 12.7 - 28 mm 9.6 - 21.1 dots	05 - .11 inches 12.7 to 28 mm 9.6 - 21.1 dots

Use the following formulas to convert inches to dots and metric:

```
Dots = inches x 192
Metric (1/10mm) = inches x 254
English (1/100 inch) = 100 x (dots/192)
Dots = Metric (1/10 mm) x 756/1000
```

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